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# Impersonally Interpreted Personal Pronouns

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# Acknowledgements

*Ich muss doch als Eltern bittschön  
auch ohne Farbänderung erkennen,  
ob mein Kind erhöhte Temperatur hat.*<sup>1</sup>

Writing this dissertation at the University of Göttingen has been an interesting experience for two reasons.

First, I thought I would write a short, very technical dissertation about a well-delineated topic, preferably involving modality. The thesis I actually wrote definitely involves modality, and one might say that it is somewhat technical. What cannot be said about my thesis, not even charitably, is that it is short, and that its topic is well-delineated. Nevertheless—and that was quite a surprise for me—I had a lot of fun working on a topic which started with one natural language example read to me by Viola Schmitt on some afternoon in our “office” in Vienna, but which over the years more or less spun out of control the more data and insights on the data I gathered. Most of the data that I collected over the years has found its way into this thesis, and it is one of my favourite parts of this work.

The second reason is that I never actively considered moving to Germany, let alone Göttingen. Frankly, I first learned the approximate geographic location of Göttingen six months after moving there, and it’s fair to say that I didn’t like the town at all at first. But Göttingen very slowly creeps up on you, and suddenly you don’t mind sitting in a smallish university town somewhere in the middle of Germany since, actually, it’s not about where you are, but who is there with you. The people I met in the last three years, both colleagues from Göttingen and guests from all over the world, made Göttingen a good place to live and work in. These people contributed either indirectly or directly to this work and I want to thank them for that.

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<sup>1</sup><http://www.best-practice-business.de/blog/?p=12309>

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Now that the work I defended in 2012 has been revised, additional thanks are in order. The last two years have been a very busy period for me, not only because of moving to Tübingen to work at another great university in an even more smallish university town. Needless to say, the experiences in these two years have shaped this revised version considerably.

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# Introduction

Personal pronouns, among them especially first and second person singular pronouns like German *ich* (Engl. ‘I’) and *du* (Engl. ‘you’), occur abundantly in every day communication. Whenever two people talk to each other, these two expressions will sooner or later be used in a sentence—provided they communicate facts about themselves. Consider the dialogue in (1).

- (1) a. A: ***Ich*** finde ***deinen*** Rock toll!  
I find your skirt awesome  
A: ‘I like your skirt!’  
b. B: *Danke! Den habe ich letzte Woche in Wien gekauft.*  
thanks that have I last week in vienna bought  
B: Thanks! I bought that in Vienna last week.

Example (1) illustrates the predominant “referential use” of first and second person singular pronouns. This use is in fact so prevalent that if you ask people what *ich* and *du* mean, they will tell you that *ich* always refers to the speaker, and *du* to the person that is addressed. When asked if *ich* and *du* could be used otherwise as well, people tend to perceive it as a trick question: after all, what else could *ich* and *du* refer to?<sup>2</sup> In place of an answer, consider the examples in (2) and (3).

- (2) ***Ich*** kann doch als Brautpaar nicht von meinen Gästen erwarten, dass  
I can PRT as bridal-couple not from my guests expect that  
*sie mir quasi die Feier finanzieren!*  
they me more-or-less the party finance  
'A bridal couple can't expect their guests to more or less pay for the party!'<sup>3</sup>
- (3) ***Du*** musst als Mannschaft einfach mehr gewinnen wollen als der Gegner.  
you must as team simply more win want than the opponent  
'A team's wish to win simply has to be greater than that of the opponent.'<sup>4</sup>

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<sup>2</sup>This, in fact, mirrors many conversations with friends and family in which I tried to explain the topic of my thesis.

<sup>3</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

<sup>4</sup><http://www.netzathleten.de/Sportmagazin/Star-Interviews/Interview-mit-Eishockey-Bundestrainer-Uwe-Krupp-Besser-spielen-als-in-Bern/5761358233643659016/head>

Neither (2) nor (3) can be sensibly understood as a statement “about” the speaker or the addressee, respectively. In fact, both examples are naturally understood as general statements: about bridal couples in the case of (2) and about teams in the case of (3). But if *ich* and *du* usually refer to very specific individuals, i.e. the current speaker and the current addressee, how does this reading come about?

The topic of this thesis is to investigate this puzzle. To give it an official name, I call personal pronouns that are used as exemplified by *ich* and *du* in (2) and (3) “impersonally interpreted personal pronouns”.

More precisely, the aim of this thesis is to examine the semantic and pragmatic aspects connected to these impersonal uses, to give an account of how these uses come to be interpreted in the way illustrated above, and to address the connection between the impersonal use and the predominant referential use.

This investigation is carried out using the example of German first person singular *ich* and second person singular *du*. But throughout the discussions in the following chapters, I also appeal to work on impersonally interpreted personal pronouns in other languages.

Results from the literature make it pretty obvious that the impersonal use of second person singular pronouns illustrated in (3) is by no means an idiosyncrasy of German. Impersonally interpreted second person singular pronouns have been observed and discussed for many languages from different language families. The following is a non-exhaustive list of attested impersonal uses of second person singular pronouns in various Indo-European languages that were discussed in recent formal and descriptive literature (e.g. Alonso-Ovalle 2000, 2002; Bennis 2004; Egerland 2003; Gruber 2011; Kluge 2012; Malamud 2006, 2007, 2012; Siewierska 2004; Zeijlstra 2008).<sup>5</sup>

- **English:** impersonal second person *you*

(4) *In those days, **you** (imp.) could marry **your** cousin.*  
(Malamud 2006:84)

- **Dutch:** impersonal second person singular *je* (weak form)<sup>6</sup>

(5) *Als **je** allergisch bent voor honden, ben **je** niet automatisch ook  
if you allergic are for dogs are you not automatically also  
*allergisch voor katten.*  
allergic for cats  
'If you (imp.) are allergic to dogs, then you are not automatically also  
allergic to cats.'  
(Gruber 2011:351)*

<sup>5</sup>Whenever “(imp.)” is added after *you* in the English translation, the intended interpretation involves an impersonal use of a second person (singular) pronoun.

<sup>6</sup>Dutch also has a strong variant for the second person singular pronoun, i.e. *jij*, which cannot be used impersonally (cf. Gruber 2011).

- **Swedish:** impersonal second person singular *du*

(6) *Om de litar på **dig** får **du** inte göra dem besvikna.*  
 if they rely on you must you not make them disappointed  
 ‘If they rely on you (imp.), you must not disappoint them.’  
 (Egerland 2003:22)

- **French:** impersonal second person singular *tu*

(7) *Quand **tu** voyages, **tu te** sens beaucoup libéré là-bas.*  
 when you travel you refl feel very liberated there  
 ‘When you (imp.) travel, you feel very liberated at that place.’<sup>7</sup>

- **Italian:** impersonal silent *pro* with second person singular agreement

(8) *Credo che in questo lavoro [**pro**] **ti** faccia male spesso.*  
 I-believe that in this work PRO yourself make bad often  
 ‘I think that you (imp.) hurt yourself often doing this job.’  
 (Gruber 2011:351)

- **Spanish:** impersonal silent *pro* with second person singular agreement

(9) *En ese departamento [**pro**] **trabajas** como un esclavo.*  
 in that department PRO work.2SG like a slave  
 ‘In that department you (imp.) work like a slave.’  
 (Alonso-Ovalle 2000:4)

In addition to the languages given here, Siewierska (2004) and Gruber (2011) list e.g. Afrikaans, Romanian, Greek, Mandarin Chinese, Indonesian, Cree, Godi, Gulf Arabic, Hindi, Kashmiri, Koromfe, Koyra Chin, and Kurdish (among others) as languages that allow an impersonal use for second person singular pronouns. So it seems that impersonally used second person singular pronouns are a cross-linguistically pervasive phenomenon.

In contrast, the impersonal use of first person singular pronouns, which can be observed for German *ich* in (2), seems to be cross-linguistically quite rare. It is important to stress “seems” in the previous sentence since to my knowledge impersonal uses of first person singular pronouns have not yet been investigated in much detail, even for German. At least for English and French, impersonal uses of first person singular pronouns have been argued to exist as well. The relevant examples are given in (10) and (11).

For the English example in (10), Kitagawa and Lehrer (1990) claim that *I* is used “impersonally”, and suggest that this use is restricted to hypothetical contexts that apply to people in general.

<sup>7</sup>Taken from C-ORAL-Rom (Cresti and Moneglia 2005). I thank Bettina Kluge (p.c.) for sharing this example with me.

- (10) *We form a frame or script for this kind of situation. . . . Thus, in order to be able to take the subway in New York I simply need a ‘taking the subway’ script or frame, if I have one, and supply now relevant specific information about the situation.*

(Kitagawa and Lehrer 1990:741, shortened)

As noted by Kitagawa and Lehrer, *I* in (10) occurs in a hypothetical context that is introduced by a “vague use” of *we* (cf. Kitagawa and Lehrer 1990). To my mind, this suggests an alternative way to account for (10): *We* introduces a vague group of people associated with the speaker (e.g. by sharing a common property). With the subsequent use of *I*, the speaker refers to himself, but presents himself as a representative of the group. That is, any property that is true of the speaker, is true of the entire group of people.

For the occurrences of French first person singular *je* occurring in (11), Kluge (p.c.) reasons that they must be impersonal uses since they could be substituted by the impersonal pronoun *on*, and the sentence in which they occur is part of a general discussion about morticians.

**Context:** Interview with a mortician. The interviewer asks whether one has to be fatalistic to work in that job.

- (11) *Non, surtout pas. Si je commence à me dire c’est*  
 no absolutely not if I start-to to myself say that-is  
*l’évidence, c’est comme ça, je me suicide.*  
 the-matter-of-course it-is like that I myself kill  
 Available: ‘No, absolutely not. If I start to tell myself that death is a matter  
 of course, that it’s just like that, I commit suicide.’  
 Available: ‘No, absolutely not. If one starts to tell oneself that death is a  
 matter of course, that it’s just like that, one commits suicide.’<sup>8</sup>

Note that in (11), *je* is also part of a conditional, i.e. it occurs in a similar environment as English *I* in (10). Even though I do not have native speaker intuitions about either English or French, (11), to my mind, does not unambiguously point towards an impersonal use of *je*. Since in the given context, the speaker-referential interpretation is both possible and plausible, a similar explanation as for (10) might be given here, as well.

It is important to note that with my discussions of (10) and (11), I do not want to argue against the possibility of an impersonal use of first person singular pronouns in English and French by trying to explain away the data. The point I want to make is that some sentences that contain occurrences of first (and also second) person singular

<sup>8</sup>Example taken from the C-ORAL-Rom corpus containing tagged transcripts of spoken communication in French, Spanish, Italian, and Portuguese (Cresti and Moneglia 2005).

pronouns might share properties with sentences containing impersonal uses. Regardless of this fact, these pronouns may not be genuine impersonal uses in the sense that I want to make precise now.

I propose the following two diagnostics to check whether an occurrence of a first or second person singular pronoun constitutes an impersonal use of the form that is investigated in this thesis:

- *Question 1:* Is the pronoun used in an explicit, hypothetical context in which the referent of the pronoun is taken as an example for the application of a general rule, or is used to illustrate a certain role?

If one of these is answered positively, the pronoun is most probably not used impersonally. In genuine impersonal uses, the pronoun never refers to the speaker and addressee with their actual properties. In case an utterance has one of the properties queried above, the first or second person singular pronoun contained therein in fact does not have to refer to the speaker and addressee with their *actual* properties. In this context, the pronoun could also refer to hypothetical versions of the speaker and addressee with potentially different sets of properties; but note that this would nevertheless constitute a referential use.

- *Question 2:* Can the sentence containing the pronoun be uttered in the exact same form by someone to whom the statement does not apply if the pronoun were interpreted referentially? Or similarly, can it be addressed to a person to whom the general statement does not apply?

If the answer is “yes”, this is a sign that the pronoun is used impersonally. In these cases, the sentence cannot express the validity of a generalization for the speaker or the addressee (maybe as members of a specific group), but has to state a generalization proper.

For impersonally used German *ich* and *du*, as exemplified in (2) and (3), the first question is answered negatively, and the second positively. Whether the pronouns in the English and French examples pass these tests is at the moment still an open question. As stated above, further investigations are needed to determine whether English and French allow for genuine impersonal uses, or whether (10) and (11) exemplify a different type of occurrence of first and second person pronouns.

Up until now, I have not addressed third person singular pronouns. The question to ask is obviously: Do third person singular pronouns also have an impersonal use? It seems to be the case that this question has to be answered negatively. Potential candidates for impersonal uses of third person singular pronouns are some instances of Elbourne’s (2005) “Voldemort Phrases”, i.e. third person singular pronouns that are modified by a restrictive relative clause. For instance at first glance, the personal pronoun *he* in (12-a) seems to be interpreted impersonally.

- (12) a. *He who hesitates is lost.*  
*Available:* People that hesitate are lost.
- b. *He is lost.*  
*Unavailable:* People are lost.

However, the availability of such an interpretation seems to crucially hinge on the presence of a relative clause. That is, if the relative clause in (12-a) is removed, as in (12-b), the impersonal-like reading becomes unavailable. As will be discussed in Chapter 1, the impersonal uses of first and second person singular pronouns, in contrast, do not depend on any specific co-occurring material.

This observation motivates one further diagnostic for the impersonal uses:

- *Question 3:* Can specific material be found that has to necessarily co-occur with the pronoun such that the sentence can be used to express a general statement? If this question is answered positively, the pronoun is most probably not used impersonally. Genuine impersonal uses do not depend on the presence of any specific co-occurring material.

Note as well that there is no direct, literal translation of (12-a) into German. To express the same general statement, either a free relative clause, as in (13-a), or the expression *derjenige* instead of the simple third person singular pronoun *er* (Engl. ‘he’) has to be used, see (13-b).

- (13) a. *Wer zögert, verliert.*  
 who hesitates loses  
 ‘Whoever hesitates, loses.’
- b. *Derjenige, der zögert, verliert.*  
 DERJENIGE who hesitates loses  
 ‘He who hesitates loses.’

Given these results on English and German, I ignore third person singular pronouns from now on, and assume that they do not have genuine impersonal uses.<sup>9</sup>

For independent reasons, I also set aside plural pronouns. For one, the semantics of plurality brings in further issues independent of the semantics of personal pronouns, which would further complicate matters, and which would add an additional level of complexity to the issues discussed in this thesis that I want to avoid. A much stronger reason to set aside plural pronouns is given in Kitagawa and Lehrer (1990), who observe that for English plural *you*, *we*, and *they*, “only” vague uses can be found. These vague uses, Kitagawa and Lehrer argue, differ from genuine impersonal uses in various respects. For instance, they cannot be replaced by impersonal pronouns, e.g.

<sup>9</sup>A possible counter-example to this claim are third person singular pronouns that are anaphoric to a noun phrase inside a generic sentence. I thank Magdalena Kaufmann (p.c.) for bringing these examples to my attention.

English *one*, which is generally an option for impersonally used personal pronouns (cf. Section 1.2). For further details on the vague use of (plural) personal pronouns, I refer the reader to [Kitagawa and Lehrer \(1990\)](#).

Given the seemingly clear-cut pre-theoretical distinction between the impersonal and referential uses of personal pronouns described above, one might wonder what makes the impersonal use a phenomenon worthwhile of a whole dissertation. As the discussion in the following chapters will show, the problem of the impersonal use of personal pronouns lies at the intersection of formal semantics and pragmatics; at the end of Chapter 4, I hope to have convinced the reader that impersonally interpreted personal pronouns are context-sensitive expressions which contribute content to both the at-issue content, i.e. the truth-conditional content, and the not-at-issue content, i.e. content that conveys additional comments on the at-issue content, of a sentence. The investigation leading up to this final result also yields results that bear on formal treatments of first and second person singular pronouns, which aim to capture the connection between form, meaning, and pragmatic function of these expressions in all of their available uses. From a theoretical point of view, the availability of an impersonal use of first and second person singular pronouns is surprising. Ever since Kaplan's ([1978 \[1989\]](#)) work on indexicality, both types of personal pronouns, but especially first person singular pronouns, have been considered prime examples for "indexical" expressions, i.e. referential expressions that "pick out" their referents from the utterance context, and contribute them directly to the truth-conditions of the sentence that contains them. *Prima facie*, it seems hard to consolidate this view with the availability of an impersonal use.

Another line of investigation that is touched by the results of this thesis are accounts of pronominal expressions that assume a one-to-one link between morphosyntactic behavior/form and meaning, i.e. that the morphosyntactic form of a pronoun strictly determines both the phonological form, as well as the meaning of personal pronouns (cf. Chapter 1). Since the impersonal and referential uses of first and second person singular pronouns do not differ morphologically, this raises the question whether a unified semantic account for all uses of these pronouns can be given, or whether the referential use and the impersonal use have to be accounted for separately.

In addition to the topics that are directly connected to impersonally used personal pronouns, further areas of research might benefit from the results of this thesis. For instance, investigations on diverse classes of expressions that show referential and non-referential uses. Apart from personal pronouns, this class contains e.g. demonstratives, proper names, and impersonal pronouns.

- The two main uses of demonstratives, which are traditionally discussed in the literature are the spatio-temporal deictic use and the anaphoric, discourse deictic use (cf. [Lakoff 1974](#); [Kaplan 1978 \[1989\]](#); [Elbourne 2008](#)). In addition, a third

use has been reported, which Lakoff (1974) calls “emotional deixis”, and Davis and Potts (2010) call “affective demonstratives”. The primary function of this use seems to be to communicate the speaker’s emotional involvement, and to try to achieve camaraderie between the speaker and the addressee, see (14).

- (14) a. *He kissed her with **this** unbelievable passion.*  
(Lakoff 1974:347)
- b. *If gangrene sets in, you’ll lose **that** nose.*  
(Lakoff 1974:352)

- The standard assumption in the literature on proper names is that they directly refer to their bearers (cf. Kripke 1980). Proper names, however, may also be used non-referentially. In this use they behave similar to common nouns (cf. Quine 1960; Burge 1973; Matushansky 2008), see (15).

- (15) a. *There are relatively **few Alfreds** in Princeton.*
- b. ***Every John Smith** hates his name.*  
(Matushansky 2008:593)

- In some languages, such as French and some dialects of German, the converse behavior to that of personal pronouns has been observed for impersonal pronouns. In some cases, French *on* and German *man* seem to show referential behavior, i.e. they can be used similarly to the respective first person plural pronouns (cf. Chapter 2), see (16) and (17).

- (16) *Nous aussi, **on** y était; tu ne nous as pas vus?*  
we also one there were you neg us has not seen  
‘We too were there, did you not see us?’  
(Creissels 2011:5f)

- (17) *Es war völlig klar, dass **man** sich nie mehr wiedersehen würde.*  
it was completely clear that one REFL never again see-again  
würde.  
would  
‘It was completely clear that we would never see each other again.’  
(Kratzer 1997:3)

If the impersonal uses of first and second person singular pronouns are examples of a more general tendency regarding the availability of non-referential uses of what has been thought as “referential expressions”, this thesis may contribute insights on the expressions listed above, and in addition highlight the link between semantics and pragmatics and their interaction in the domain of prototypically individual denoting expressions.

## The structure of this thesis

Chapter 1 provides a detailed data discussion of the impersonal uses of German first and second person singular pronouns *ich* and *du*. In Sections 1.2–1.4, the morphosyntactic, semantic, and pragmatic properties of the respective impersonal uses are reviewed. Furthermore, they are compared to the corresponding referential uses and the impersonal uses of second person singular pronouns in other languages—with a focus on the work done on impersonally used English *you*. The central properties highlighted in these sections:

- *On the morphosyntactic level:* the impersonal and the referential uses behave exactly the same
- *On the semantic level:* impersonally used personal pronouns and impersonal pronouns are truth-conditionally equivalent, and they exclusively occur in generic sentences
- *On the pragmatic level:* the impersonal uses induce pragmatic effects that can be linked to their referential uses

Section 1.5 presents a summary of traditional and recent work on the meaning of personal pronouns as expressions that contribute individual variables or definite descriptions in the case of third person singular pronouns, and context coordinates in the case of first and second person singular pronouns. And lastly, in Section 1.6, I argue against an account of sentences containing an impersonal use of *ich* or *du* in which they are analyzed as underlyingly counterfactual statements about the speaker or the addressee, respectively. The overall result of this chapter is that according to the data, the impersonal uses are independent from the referential uses of these pronouns on a semantic level. That is, the impersonal use does not arise from the interaction of referentially used pronouns with co-occurring material.

The aim for Chapter 2 is to propose a first account for German first person singular *ich* and second person singular *du* that treats the referential and the impersonal use of the two pronouns in a unified manner. In this account, the referential uses are assimilated to the impersonal uses, which in turn are analyzed in analogy to accounts for impersonal pronouns, like German *man* and English *one*. In Section 2.2, I summarize previous works on the morphosyntactic and semantic behavior of impersonal pronouns, and discuss previous semantic analyses that differ in their assumptions whether impersonal pronouns are definite or indefinite expressions. In Section 2.3, I review two analyses of impersonally interpreted personal pronouns proposed by Malamud (2006, 2007) and Alonso-Ovalle (2000, 2002), who also differ in their respective stance with respect to the (in)definiteness of the impersonal uses. Section 2.4 revisits the question whether impersonal pronouns and/or impersonally used personal pronouns need to be analyzed as definite or indefinite expressions. I argue that because these expressions

occur only in generic sentences, this question cannot be answered directly. However, comparisons with full (in)definite noun phrases in generic sentences suggest that analyzing them as indefinite expressions is the better option. Section 2.5 introduces an alternative account for the meaning of pronouns put forth in Nunberg (1993) and its formalization in Elbourne (2008). The unified account built up in this section is based on these two texts. The general idea of this unified account is that the link between the impersonal and referential uses are pragmatic effects, which can be modelled in an underspecified manner which allows to capture the referential uses, as well. In proposing this idea, the account is similar to the proposal in Malamud (2006, 2007). In Section 2.6, I discuss various problems that arise for the account: (i) problems that arise for the analysis of the impersonal and referential uses directly, and (ii) problems that arise in combination with a certain analysis of the generic operator *Gen*.

In Chapter 3, the second class of problems are addressed and the intensional sentential contexts of the impersonal uses are investigated in detail. The aim is to provide an adequate analysis of the generalizations expressed by sentences containing impersonally interpreted personal pronouns, but which also accounts for the behavior of the co-occurring overt modals found in the data. Section 3.2 provides the theoretical background for the interpretation of modal expressions, in particular for German modal verbs. In Section 3.3, the semantics of generic sentences is addressed. I review three proposals for the semantics of the generic operator *Gen* put forth in Krifka et al. (1995), Drewery (1998), and Greenberg (2007), and adopt an adapted version of the second account. Sections 3.4 and 3.5 address the interaction of modal verbs, restricted to the flavors found in the data, with the generic operator. The result of these sections is that in sentences containing impersonally interpreted *ich* and *du*, the modal verbs are always interpreted in the scope of the generic operator. Furthermore, it is shown that a simple combination of the accounts for modal verbs and *Gen* proposed in Sections 3.2 and 3.3, respectively, does not result in adequate truth-conditions. I argue that in a certain sense, the interpretation of the modal also depends on the world of evaluation, and the components of *Gen* and the modal verbs interact. This interaction is analyzed in detail in Section 3.5.

In Chapter 4, I discard the unified account proposed in Chapter 2, and propose a more pragmatically oriented account for the impersonal uses of *ich* and *du*. In Section 4.2, I first combine the results of Chapter 2 and Chapter 3 to show with a critical evaluation of the resulting account based on Section 2.6 that the way in which the pragmatic effects of impersonally interpreted *ich* and *du* are modelled is inadequate. That is, even though the pragmatic effects seem to link the impersonal and referential uses, this link cannot be put at the truth-conditional level. For the rest of Chapter 4, I give up on a unified account for the impersonal and referential uses, and turn to giving an analysis of the impersonal uses only that adequately captures their pragmatic effects.

Section 4.3 discusses and evaluates the treatment of the English impersonal pronoun *one* by Moltmann (2006, 2010a,b). Moltmann places her analysis of the meaning of *one* on its pragmatic effects, which, I argue, are shared by German *man* and impersonally used *ich* and *du*. In light of the results in Section 4.3, I give a brief overview of the traditional and recent literature on “not-at-issue content” in Section 4.4. In Section 4.5, I take a look at whether the intuition that the pragmatic effects of impersonally interpreted *ich* and *du* and of the impersonal pronoun *man* result from not-at-issue meaning. Based on these results, I put forth a new proposal for the specific not-at-issue content contributed by these pronouns. In Section 4.6, I briefly address the connection between the referential and the impersonal uses given the proposal in 4.5, and discuss two possible ways in which the uses might be linked—or not.

The Conclusion summarizes the main results of this thesis, and addresses some immediate open questions and further issues.

In addition to the main content of this thesis, the three sections in the Appendix provide discussions (i) on the syntactic and semantic behavior of German nominal *als*-phrases, (ii) on insights that may or may not be provided by German discourse particles on which contexts of use are preferred by *ich* and *du*, and (iii) on a possible extension of the modal account proposed in Chapter 3 to those examples in the data that have a conditional sentence structure. This material was put into the Appendix for two reasons: (i) it would have steered the reader too far off the main path, and (ii) the discussions in the Appendices only provide some initial considerations on the topics listed above that are needed to better understand the data. None of these discussions can be seen as comprehensive accounts of these topics, and are also not intended as such.

## A note on the data discussed in this thesis

Most of the data given throughout this thesis are real life examples taken from the internet. The need for real life data presented itself early on in my work. No detailed data discussions exist for the impersonal use of *ich* that I could have relied on, and consequently no comparisons with impersonally used *du* and the impersonal use of *man* were available either. In the course of my investigations, I assembled a small data collection for the impersonal readings of *ich* and *du* by searching for certain target strings, e.g. “*ich muss als*” (Engl. ‘I must as’), “*ich kann doch als*” (Engl. ‘I can PRT as’), and variations thereof. Given this style of looking for data, only a specific subset of naturally occurring examples have been targeted and collected, though. Two artifacts of this method, for instance, are that the data contains only the modals *können* (Engl. ‘can’) and *müssen* (Engl. ‘must’), and that in fact nearly all of the examples that were collected contain one of these modals. Hence, any observations on the basis of the collected data needs to be made with the following caution kept in mind: Neither

claims about relative frequency, nor negative or universal claims about the data can and should be made from the collected material.

Corpus queries in any of the standard corpora of German were not an option for two specific reasons. First, the impersonal uses of *ich* and *du* belong to an informal register, and are predominantly employed in spoken language. Most texts in standard German corpora are taken from high standard written texts, i.e. newspaper articles, fictional texts, manuals, and specialized texts. A detailed analysis of the examples found by internet searches showed that most of these examples can be found in written texts that are close to spoken language, i.e. forum discussions, comments on newspaper articles, and transcribed interviews. Second, for *ich* and *du* the specific usages, i.e. referential vs. impersonal, are not encoded in the tag-sets used for standard corpora. This means that for every occurrence of these pronouns, the specific reading has to be determined independently in its context. Since the personal pronouns *ich* and *du* are two of the most frequent lexical items in German, and most of their occurrences are referential uses, a corpus would not have facilitated the search for real life data. Accordingly, I decided against working with standard corpora.

For each item collected from the internet, I give its source, i.e. its URL, in a footnote. Unless otherwise indicated as for one or two exceptional cases, all examples are accessible at the time of writing.

## A note on the formal system

In this thesis, I adopt a possible worlds semantic framework with explicit world variables as standardly employed in the work on modality (cf. von Stechow and Heim 2011). In addition, I adopt Kaplanian contexts to model the coordinates of the utterance context, i.e. a Kaplanian context models a “possible occasion of use” which has a speaker, an addressee, a time, a location, and a possible world (cf. Kaplan 1978 [1989]).

To formalize the meanings of natural language expressions, I use the standard typed  $\lambda$ -language with functional  $\lambda$ -terms of the following form (cf. Heim and Kratzer 1998).

$$(18) \quad \lambda x_\alpha : \phi.\psi$$

where  $\phi$  restricts the domain of the variable  $x$  of type  $\alpha$ , and  $\psi$  specifies the value assigned to  $x$

The set of types  $\mathcal{T}$  as defined in (19).

- (19) a. Basic types:  $e$  (individuals),  $t$  (truth-values)  $\in \mathcal{T}$
- b. Functional types: for  $\alpha, \beta \in \mathcal{T}$ ,  $\langle \alpha, \beta \rangle \in \mathcal{T}$
- c. Intensional types: for  $\alpha \in \mathcal{T}$ ,  $\langle s, \alpha \rangle \in \mathcal{T}$

The model  $M$  is as defined in (20).<sup>10</sup>

- (20) The model  $M$  is a tuple  $\langle W, D, C, \llbracket \cdot \rrbracket, g \rangle$  for which
- a.  $W$  is the set of worlds
  - b.  $D$  is the set of individuals
  - c.  $C$  is the set of contexts
  - d.  $g$  is a variable assignment, i.e. a function  $g : \mathbb{N} \rightarrow D$
  - e.  $\llbracket \cdot \rrbracket$  is the interpretation function

The domain of expressions of type  $\alpha \in \mathcal{T}$ ,  $D_\alpha$ , is as defined in (21).

- (21)
- a.  $D_e := D$ , the set of individuals in  $M$
  - b.  $D_t := \{0, 1\}$ , a set of truth-values
  - c.  $D_{\langle \alpha, \beta \rangle} := D_\beta^{D_\alpha}$ , the set of functions from  $D_\alpha$  to  $D_\beta$
  - d.  $D_{\langle s, \alpha \rangle} := D_\alpha^W$ , the set of functions from  $W$  to  $D_\alpha$

In the Kaplanian tradition, a context  $c \in C$  is standardly defined as in (22).<sup>11</sup>

- (22) For all contexts  $c \in C$ ,  $c$  is a quintuple  $\langle c_S, c_A, c_T, c_L, c_W \rangle$

The elements  $c_S$  and  $c_A$  are in  $D_e$ , and model the speaker and the addressee, respectively. The element  $c_T$  models the utterance time,  $c_L$  the utterance location, and  $c_W$  the world of the utterance. Since I will not deal with temporal and spatial semantics, no set of times/intervals or set of locations is introduced. Hence, for the purpose of this thesis, and unless otherwise indicated, contexts are defined as follows.

- (23) For all  $c \in C$ ,  $c = \langle c_S, c_A, c_W \rangle \in D_e \times D_e \times W$

The interpretation function  $\llbracket \cdot \rrbracket$  is relativized to the assignment function  $g$ , a world of evaluation  $w$ , and an utterance context  $c$ . It is also implicitly understood as restricted to the specific natural language that is interpreted at a given time.

<sup>10</sup>sI assume that there is only one adequate model, i.e. I do not assume that there is a class of models that differ with respect to the sets  $W$ ,  $D$ , and  $C$  that are chosen. Cf. Zimmermann (2011b).

<sup>11</sup>In the original proposal by Kaplan (1978 [1989]), contexts are defined as tuples containing an individual, a time, a location, and a possible world.



# Chapter 1

## Data discussion and preliminary issues

### 1.1 Introduction

The central issue addressed in this thesis is the question of how to account for the semantic and pragmatic properties of “impersonal uses” of first and second person singular personal pronouns, illustrated in (1).<sup>1</sup>

- (1) a. *Ich kann als Lehrer meinen Schülern nicht meine persönliche Ideologie aufzwingen.*  
I can as teacher my pupils not my personal ideology force-on  
Understood as: ‘A teacher can’t force his ideology on his pupils.’<sup>2</sup>
- b. *Du kannst als Frau doch auch Ansprüche haben, denen nicht jeder Mann gerecht wird.*  
you can as woman PRT also standards have that not every man meets  
Understood as: ‘A woman can also have standards that not every man meets.’<sup>3</sup>

In the semantic and pragmatic literature, first and second person singular pronouns are usually addressed in the context of “deictic”—following Kaplan (1978 [1989]), “directly referential”—expressions, and are hence standardly analyzed as directly referring to the

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<sup>1</sup>Following other researchers working on corresponding readings of pronouns in other languages, I call the interpretation of occurrences of *ich* and *du* as in (1), the “impersonal reading” or the “impersonal use” of *ich* and *du*. Sometimes, the name “generic reading” or “generic use” are used, as well. The impersonal use stands in direct contrast to the “referential use” or “deictic use” of these pronouns.

<sup>2</sup><http://blasphemieblog2.wordpress.com/2011/03/25/fabelwesen-lehrer-wegen-grus-gott-verbots-kritisiert/>

<sup>3</sup>[http://forum.gofeminin.de/forum/couple1/\\_\\_\\_f47262\\_couple1-Jmachen-wir-uns-doch-nix-vor.html](http://forum.gofeminin.de/forum/couple1/___f47262_couple1-Jmachen-wir-uns-doch-nix-vor.html)

speaker and the addressee, respectively. Given this point of view, the behavior of *ich* and *du* in (1) is unexpected, and calls for an explanation.

The main aim for this section is to build a foundation for the rest of this thesis by describing various aspects of the data that seem to be characteristic of occurrences of first and second person singular pronouns as in (1). This is complemented by an introduction of the standard assumptions on the semantics of personal pronouns, and by dismissing an intuitively appealing analysis of the impersonal uses, which invokes counterfactual conditionals as underlying representations.

In the first part of this chapter (Sections 1.2–1.4), I discuss three central aspects of German impersonally used first person singular *ich* and second person singular *du*: their semantic behaviour, possible interactions with other material in the sentence, and their distinct pragmatic effects and contextual requirements. I connect these observations made for the German pronouns to previous observations in the literature for impersonal uses of English personal pronouns (Kitagawa and Lehrer 1990; Malamud 2006, 2007, 2012). In addition, the impersonal uses of *ich* and *du* are contrasted with the German dedicated impersonal pronoun *man* and the referential uses of *ich* and *du*.

The conclusion to be drawn from these three sections is (i) that the impersonal uses and referential uses of *ich* and *du* make distinct semantic contributions to the truth-conditions of a sentence, (ii) that impersonal uses are truth-conditionally equivalent to the impersonal pronoun *man*, and (iii) that impersonally used *ich*, *du*, and *man* differ in their pragmatic effects and contextual requirements.

Section 1.5 is then dedicated to a brief overview of semantic accounts for personal pronouns proposed in the literature. It is shown that the accounts that are currently on offer cannot be easily adapted to capture the semantic contribution of the impersonal uses of *ich* and *du*.

In the last section of this chapter, Section 1.6, I discuss and dismiss an analysis of sentences containing impersonally used *ich* and *du* based on the common first intuition to assume that sentences containing impersonal uses express counterfactual statements regarding the speaker and the addressee, respectively.

Sections 1.5 and 1.6 together with the preceding data discussion suggests that the impersonal use of first and second person pronouns constitutes an independent use which cannot be reduced straightforwardly to the referential use of the pronouns.

## 1.2 Data discussion – part I: The semantics of the impersonal use

### 1.2.1 The impersonal use and its connection to genericity

Examples (2)–(5) again exemplify the central data points that will be dealt with in this thesis.<sup>4</sup>

- (2) *Ich kann doch als Brautpaar nicht von meinen Gästen erwarten, dass sie mir quasi die Feier finanzieren!*  
 I can PRT as bridal-couple not from my guests expect that they me more-or-less the party finance  
 ‘A bridal couple can’t expect their guests to more or less pay for the party!’<sup>5</sup>
- (3) *Wenn ich als Mannschaft gewinnen will, muss ich motiviert auf den Platz gehen.*  
 if I as team win want must I motivated on the field go  
 ‘If a team wants to win, it has to enter the field motivated.’<sup>6</sup>
- (4) *Du kannst als Frau doch nicht erwarten, dass dir jeder Kerl hinterher rennt.*  
 you can as woman PRT not expect that you every guy after chases  
 ‘A woman can’t expect every guy to chase after her.’<sup>7</sup>
- (5) *Wenn du als Händler von jemandem ein Fahrzeug kaufst und dann weiter verkaufen möchtest, dann musst du den Wagen vorher überprüfen lassen.*  
 if you as trader from someone a vehicle buy and then further sell want then must you the car before check let  
 ‘If a trader wants buys a vehicle from someone, and wants to resell it, then he has to let it get checked beforehand.’<sup>8</sup>

The crucial observation for (2)–(5) is that even though first and second person singular pronouns occur in these examples, they do not express statements about the speaker or the addressee, respectively. Instead, they express general statements about people sharing a certain property: example (2) talks about bridal couples in general, example

<sup>4</sup>The following data discussion nearly exclusively discusses impersonal readings of first and second person singular pronouns in declarative sentences. Impersonal readings that occur in questions and imperatives will be addressed briefly at the end of this section.

<sup>5</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

<sup>6</sup>[http://www.welt.de/print-welt/article532778/Schlechte\\_Argumente\\_fuer\\_den\\_Aufnahmeantrag\\_an\\_die\\_G\\_14.html](http://www.welt.de/print-welt/article532778/Schlechte_Argumente_fuer_den_Aufnahmeantrag_an_die_G_14.html) (with slight modifications)

<sup>7</sup>[http://forum.gofeminin.de/forum/couple1/\\_f64874\\_couple1-Wie-kann-ich-ihm-zeigen-dass-ich-ihn-wirklich-mag-razz-AMOUR.html#698995](http://forum.gofeminin.de/forum/couple1/_f64874_couple1-Wie-kann-ich-ihm-zeigen-dass-ich-ihn-wirklich-mag-razz-AMOUR.html#698995)

<sup>8</sup><http://diskussionen.quoka.de/viewtopic.php?t=691>

(3) about teams in general, example (4) about women in general, and example (5) about traders in general.

The aim of this entire section is to get an understanding of the semantic contribution of the impersonal use of *ich* and *du* by comparing the impersonal uses to the impersonal pronoun *man* and the corresponding referential uses. The following discussion also includes observations and insights from Gruber (2011) and Malamud (2007, 2012), who also investigate impersonally used German second person singular *du*, and from Kitagawa and Lehrer (1990) and Malamud (2006, 2007, 2012) on English impersonally used *you*.<sup>9</sup>

The function of sentences containing impersonally used first and second person singular pronouns is to express specific kinds of statements, i.e. generalizations, rules, norms, regulations, and other general statements about a individuals with a certain common property. In other words, sentences of this form intuitively express generic statements; this is reflected in the translations of (2)–(5).

This intuition is supported primarily by the observation that sentences containing impersonally interpreted personal pronouns show all of the characteristic properties that have been identified for generic sentences. The three central properties of generic sentences are (i) that they are used to express generalizations of various kinds, (ii) that they allow for exceptions to the generalization, and (iii) that they support inferences to “appropriate counterfactuals” (cf. Chapter 3).

It has already been established above that sentences containing impersonally interpreted personal pronouns fit the first central property of generic sentences. They also comply with the second central property—allowing for exceptions—since the speaker in (4) could follow-up his remark with a sentence like (6).

- (6) *Das können höchstens Supermodels.*  
 this can at-most supermodels  
 ‘Only supermodels can do that, if at all.’

With this follow-up, the speaker would state that he considers supermodels to be legitimate exceptions to the rule that he expresses in (4). The role of exceptions in generic sentences is further elaborated in Chapter 3.

The third characteristic property can be used as an easy test for genericity since it differentiates between generic sentences and sentences expressing “accidental generaliza-

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<sup>9</sup>Kitagawa and Lehrer (1990) provide a detailed data discussion and a descriptive analysis of the non-referential uses of the English first and second person pronouns *I*, *you*, and *we*. They distinguish two types of non-referential uses: an impersonal use and a vague use. Personal pronouns that have an impersonal use, they argue, include *you* (singular), *we*, and *I* (see comments below). This use is restricted to sentences that express generalizations on people. The availability of a vague use does not coincide with the availability of an impersonal use. Vague uses can be found with *you* (plural), *we*, and *they*, and thus seem to be connected to semantic plurality.

tions”. For instance, from the generic sentence about lions in (7-a), the counterfactual in (7-b) can be inferred.

- (7) a. *Lions have bushy tails.*  
 b. *If Chester the hamster were a lion, he would have a bushy tail.*

In contrast, generalizations expressed by universal quantification over actual individuals do not have this property; (8-b) cannot be inferred from (8-a).

- (8) a. *Every student in this class has blond hair.*  
 b. *If Peter were a student in this class, he would have blond hair.*

Universal quantification over actual individuals expresses accidental generalizations. For accidental generalizations, the fact that a predicate applies to all individuals of a certain set is not the result of an underlying rule or norm. In other words, things might have been different (cf. Drewery 1998). This clashes with the possibility to infer appropriate counterfactuals.

Sentences containing impersonally used *ich* and *du* express generalizations that support counterfactual inferences, e.g. (9-a) supports (9-b) and (10-a) supports (10-b).<sup>10</sup>

- (9) a. *Ich muss als Migrant immer besser sein, als die Einheimischen,*  
 I must as migrant always better be than the locals  
*damit ich dort bestehen kann.*  
 so-that I there persist can  
 ‘A migrant always has to be better than the locals to persist there.’<sup>11</sup>
- b. *Wenn Peter Migrant wäre, müsste er (auch) besser sein als die*  
 if Peter migrant were would-have-to he also better be than the  
*Einheimischen, um dort zu bestehen.*  
 locals so-as there to persist  
 ‘If Peter were a migrant, he would (also) have to be better than the locals to persist there.’
- (10) a. *Du kannst als Frau doch nicht erwarten, dass dir jeder Kerl*  
 you can as woman PRT not expect that you every guy  
*hinterher rennt.*  
 after chases  
 ‘A woman can’t expect every guy to chase after her.’<sup>12</sup>

<sup>10</sup>Gruber (2011) shows that counterfactual inferences that are supported by sentences containing impersonally used *du* are available for the addressee, and concludes that there is still a hypothetical connection to the addressee in this use. However, as example (10-b) shows, availability of counterfactual inferences for the addressee is part of a more general property of generic sentences. The special connection to the addressee perceived for impersonally used *du* is pragmatic in nature (cf. Section 1.4).

<sup>11</sup><http://www.dw-world.de/dw/article/0,,2037399,00.html>

<sup>12</sup>[http://forum.gofeminin.de/forum/couple1/\\_\\_\\_f64874\\_couple1-Wie-kann-ich-ihm-zeigen-dass-ich-ihn-wirklich-mag-razz-AMOUR.html#698995](http://forum.gofeminin.de/forum/couple1/___f64874_couple1-Wie-kann-ich-ihm-zeigen-dass-ich-ihn-wirklich-mag-razz-AMOUR.html#698995)

- b. *Wenn Peter eine Frau wäre, könnte er (auch) nicht erwarten, dass ihm jeder Kerl hinterher rennt.*  
 if Peter a woman were, could he also not expect that  
*him every guy after chases*  
 ‘If Peter were a woman, he also could not expect that every guy chases after him.’

The connection with genericity has also been noted for impersonally used second person singular pronouns in other languages, cf. e.g. Kitagawa and Lehrer (1990) and Malamud (2006, 2007) for English impersonally used *you*, as illustrated in (11).

- (11) *Two hundred years ago, you used to go into the forest when you wanted firewood for yourself.*  
 (Kitagawa and Lehrer 1990:744)

Example (11) is most naturally interpreted as involving an impersonal use of *you*: ‘Two hundred years prior, people in general used to go collect firewood’. That is, the sentence expresses a general statement about people that lived two hundred years before. It can be easily checked that also (11) allows for exceptions, and supports appropriate counterfactuals.

The strict link between the impersonal readings of personal pronouns and generic sentences places clear restrictions on the availability of impersonal readings: sentences containing an impersonally interpreted personal pronoun cannot report singular, specific incidents, actions, situations, or circumstances. That is, these sentences cannot express episodic statements. Consequently, in episodic statements only the referential use of personal pronouns is available.<sup>13</sup> Consider example (12) for German, and example (13) for English personal pronouns.

- (12) a. *Gestern um sechs habe ich meine Kühe gemolken.*  
 yesterday at six have I my cows milked  
 Only available: ‘Yesterday at six o’clock, I milked my cows.’  
 b. *Gestern um sechs hast du deine Kühe gemolken.*  
 yesterday at six have you your cows milked  
 Only available: ‘Yesterday at six o’clock, you (addr.) milked your cows.’
- (13) *Yesterday at six o’clock, you milked your cows.* (only addr.)

Note that German verbal morphology does not distinguish episodic statements from generic statements.<sup>14</sup>

<sup>13</sup>In the translations, I give the intended interpretation of second person *you* in parentheses. The referential reading is marked by postposed ‘(addr.)’, and the impersonal reading is marked by ‘(imp.)’.

<sup>14</sup>Cf. Dahl (1995) for a cross-linguistic investigation of temporal and aspectual marking of episodic statements in contrast to generic statements.

- (14) a. *Peter isst Essiggurken.*  
Peter eats pickles
- b. *Peter hat Essiggurken gegessen.*  
Peter has pickles eaten

Example (14-a) can be used to describe a current, single situation in which Peter is eating pickles. But it can also be understood as a general statement about Peter, i.e. that Peter has the habit of eating pickles, or that he does not object to eating pickles. The same can be observed for the variant for which *essen* (Engl. ‘eat’) is in perfect tense in example (14-b). This sentence can be used to state that there was a particular situation in which Peter was eating pickles in the past. But it can again also express that Peter had the habit of eating pickles, or did not object to eat pickles at some point in the past.

Hence for German, looking at the verb form alone is insufficient for spotting impersonal uses. Certain linguistic material may tip the scale in one or the other direction, e.g. temporal and spatial expressions denoting specific times and places, cf. Section 1.3. For sentences without overt modifiers, as (14-a) and (14-b), however, it can only be determined contextually whether they express episodic or generic statements. Regarding specific data, this means that sometimes the only possibility to classify an occurrence of first or second person singular pronouns as impersonal or referential is to rely on speaker intuitions regarding the intended use.

One final note has to be made regarding impersonal readings of first person singular pronouns. As discussed in the Introduction, Kitagawa and Lehrer (1990) argue for an impersonal reading for English first person singular *I*. This is a surprising claim since it is usually assumed that English *I* is a pure indexical in the sense of Kaplan (1978 [1989]), i.e. that no other reading apart from the speaker-referential reading exist. Kitagawa and Lehrer give the following example to support their claim.

- (15) *We form a frame of script for this kind of situation. ... Thus, in order to be able to take the subway in New York I simply need a ‘taking the subway’ script or frame, if I have one, and supply now relevant specific information about the situation.*
- (Kitagawa and Lehrer 1990:741, shortened)

If this example indeed illustrates a genuine impersonal use for English *I*, it is much more restricted and rare than the impersonal use of German first person singular *ich*. For any of the German examples it seems to be the case that when they are translated literally into English, the translations come out as uniformly speaker referential. In fact, Kitagawa and Lehrer (1990:741f) suggest that impersonally used *I* is only available in

very specific contexts, i.e. in hypothetical contexts such as the one in (15).<sup>15</sup> Given its unclear status, I leave aside the potential impersonal reading of *I* throughout this thesis, and focus mainly on German impersonally used *ich* and *du* and English impersonally used *you*.

To summarize the central points of this subsection: Sentences containing impersonally used *ich* and *du* express general statements, rules, norms, and generalizations of other kinds. They share this property with sentences containing impersonally used personal pronouns in other languages. Since sentences of this kind not only allow for exceptions, but also support inferences to appropriate counterfactuals, they need to be grouped with and analyzed as generic sentences.

### 1.2.2 Truth-conditional equivalence and impersonal pronouns

In this section, I argue that in their impersonal readings, *ich* and *du* are truth-conditionally equivalent not only to each other, but also to the dedicated impersonal pronoun *man* (Engl. ‘one’).

The truth-conditional equivalence of impersonally used *ich* and *du* is illustrated by examples (16-a) and (16-b), which express the same general obligation for teams that want to win.

- (16) a. *Wenn ich als Mannschaft gewinnen will, muss ich kämpfen.*  
 if I as team win want must I fight  
 ‘If a team wants to win, it has to fight.’
- b. *Wenn du als Mannschaft gewinnen willst, musst du kämpfen.*  
 if you as team win want must you fight  
 ‘If a team wants to win, it has to fight.’

This observation can be extended to the German impersonal pronoun *man*. Replacing the personal pronouns in the above statement with *man* does not change the truth-conditions of the generalization that is expressed.

- (17) *Wenn man als Mannschaft gewinnen will, muss man kämpfen.*  
 if one as team win want must one fight  
 ‘If a team wants to win, it has to fight.’

In fact, *man* can be substituted *salva veritate* for the impersonally interpreted personal pronouns in all of the German examples given in this thesis. This means that the contribution of the impersonal readings of *ich* and *du* to the truth-conditions of the entire sentence has to be the same as the contribution of the impersonal pronoun

<sup>15</sup>Note, that the introductory sentence in the example contains an impersonal and/or vague use of first person plural *we*. Therefore, the first person singular pronouns could be dependent on *we*, and the example might be a case of modal subordination (cf. Roberts 1987). However, a detailed analysis of this example is beyond the scope of this discussion.

*man*.<sup>16</sup> This claim is further supported by observations (i) regarding the actual use of the impersonal readings, and (ii) regarding shared semantic properties.

The first observation, which is already discussed in Kitagawa and Lehrer (1990), is that it is possible for a speaker to switch between impersonal uses of different personal pronouns intending them to co-refer.<sup>17</sup>

For the German pronouns, examples (18)–(20) illustrate this possibility.

- (18) *Wenn ich als Händler Schrott kaufe, dann muss ich mit so etwas rechnen. [...] Wenn du als Händler von jemandem ein Fahrzeug kaufst und dann weiter verkaufen möchtest, dann musst du den Wagen vorher überprüfen lassen.*  
 if I as trader junk buy then must I with like-that something reckon [...] if you as trader from someone a vehicle buy and then further sell want then must you the car before check let  
 ‘If a trader buys trash, he has to expect a situation like this.[...] If a trader buys a vehicle from someone, and he wants to resell it, he has to let it get checked beforehand.’<sup>18</sup>
- (19) *Es gibt eigentlich keine bestimmten Tricks die man als Anfänger lernen muss. Du kannst als Anfänger auch lernen: z.B. Shadow ...*  
 it exists not-really no specific tricks that one as beginner learn must you can as beginner also learn e.g. Shadow  
 ‘There are no specific tricks that a beginner has to learn. As a beginner, you can also learn: e.g. Shadow ...’<sup>19</sup>
- (20) *Aaaaber mal ehrlich, wenn ich als Arbeitgeber eine Stellenanzeige aufgabe, dann checke ich doch wenn das Ding online ist, ob alles stimmt. Jedenfalls, wenn man ein Arbeitgeber ist, bei dem ich als Arbeitnehmer arbeiten will.*  
 but-wait honestly, if I as employer a job-ad place then check I part when the thing online is whether part everything is-right in-any-case if one an employer is for whom I as employee work wants  
 Available: ‘But wait, honestly, if an employer places a job ad, then he has to double-check online whether the ad is fine. At least, if one is an employer, I want to work for as an employee.’

<sup>16</sup>Kitagawa and Lehrer (1990) already note that the impersonal reading of English *you* is truth-conditionally equivalent with the English impersonal pronoun *one*. Specifically, they state that *you* and *one* are interchangeable, and that they are “informationally equivalent”.

<sup>17</sup>Kitagawa and Lehrer (1990) do not give an example for this, but they state: “Although person shifts (*we*, *you*, *one*) within a text or utterance are considered stylistically inelegant, they do in fact occur frequently in spontaneous conversation, testifying to their informational equivalence.” Kitagawa and Lehrer (1990:741).

<sup>18</sup><http://diskussionen.quoka.de/viewtopic.php?t=691>

<sup>19</sup><http://forum.penspinning.de/viewtopic.php?f=62&t=25014>

In example (18), the speaker switches between impersonally used first person *ich* and second person *du* while elaborating on his point about traders; in example (19), the speaker switches from *man* to impersonally used *du* to talk about beginners in pen-spinning; and in example (20), the speaker switches from impersonally used *ich* to *man* to talk about employers.

The second observation concerns a restriction on the set of individuals for which impersonal uses of *ich* and *du* can be used. For the impersonal reading of English *you*, it is claimed in the literature that it can only be used to express generalizations about people, i.e. humans (Kitagawa and Lehrer 1990; Malamud 2006, 2007). While this restriction might be too strict even for impersonally used *you*, it is decidedly too strict for German *ich* and *du*. See (21) and (22), which suggest that German *ich* and *du* are constrained animate individuals.

- (21) *Wenn ich mich als Hund aber anders verhalte, dann bekomme ich eine*  
 if I myself as dog but differently comport then get I a  
*Zuwendung, zum Beispiel Streicheleinheiten oder Leckerchen.*  
 attention for example strokes or treats  
 ‘But if a dog behaves differently, he gets positive attention, for example strokes  
 or treats.’<sup>20</sup>

- (22) *Wenn du als Katze etwas angestellt hast, dann musst du ganz schnell*  
 if you as cat something caused has then must you very fast  
*dafür sorgen, dass es so aussieht, als hätte es der Hund verbrochen.*  
 for-that take-care that it so looks as-if had it the dog caused  
 ‘If you, a cat, did something bad then see to it very quickly that it looks as  
 though it was the dog’s fault.’<sup>21</sup>

For some native speakers, statements about animals, like (21) and (22), feel slightly strained since they feel that in these examples animals are treated on a par with humans. Still, these examples are strictly better than using impersonally interpreted *ich* and *du* to make general statements about inanimate objects, as in (23).

- (23) ??*Ich kann als Schraubenzieher Schrauben verschiedener Größe schrauben.*  
 I can as screw-driver screws various sizes screw  
 ‘A screw-driver can screw screws of various sizes.’

Sentences like (23) imply that the speaker assigns potential agenthood and the ability of conscious thought to these objects. Therefore, impersonal readings of personal pronouns—at least in German—require that the individuals for which the generalization is stated be animate. The same observation can be made for the impersonal pronoun *man*.

<sup>20</sup><http://www.swr.de/swr1/rp/programm/-/id=446640/mpdid=2388692/nid=446640/did=1477882/fqgyj2/index.html>

<sup>21</sup>Adapted from <http://asilenobiles.beepworld.de/sprueche.htm>

- (24) a. *Ein beliebter Platz ist der Eingangsbereich – schließlich hat man da  
a popular place is the entrance-area – after-all has one there  
als Hund alles im Blick.  
as dog everything in-the view  
‘The entrance area is a popular place – after all, a dog can keep an eye on  
everything from there.’<sup>22</sup>*
- b. *??Man kann als Schraubenzieher Schrauben verschiedener Größe  
one can as screw-driver screws various sizes  
schrauben.  
screw  
‘A screw-driver can screw screws of various sizes.’*

The third observation grouping impersonally used *ich* and *du* with *man* is that impersonally used personal pronouns, as well as impersonal pronouns show quantificational variability effects with adverbs of quantification (cf. Malamud 2006, 2012). Quantificational variability effects are first discussed in Lewis (1975) for indefinite noun phrases in the scope of adverbs of quantification, see (25).

- (25) *In those days, a person usually/rarely lived to be 60.*

While *usually* and *rarely* are standardly analyzed as quantifying over times, occasions, or situations, interpreting example (25) in this light results in a nonsensical statement: Some time in the past, it was a usual/rare occurrence for a (particular) person to live to be 60. That is, a particular person lived (and died) multiple times and of those times many/few were such that the person lived to be 60. Example (25) is most naturally interpreted with a different domain of quantification for the adverb, i.e. with the adverbs *usually* and *rarely* quantifying over individuals alive in those days. This reading can be paraphrased by using the nominal quantifiers *most* and *few* as in (26).

- (26) *In those days, most/few people lived to be 60.*

This interpretational variability regarding the quantificational domain of *usually* and *seldom* seems to be restricted to sentences containing indefinite DPs, like *a person* in (25). The same effect cannot be observed with definite noun phrases and other referential expressions, which do not seem to provide an alternative domain of quantification for adverbs of quantification.<sup>23</sup>

- (27) a. *#In those days, Peter usually/rarely lived to be 60.*  
b. *#In those days, the man usually/rarely lived to be 60.*  
c. *#In those days, he usually/rarely lived to be 60.*

<sup>22</sup><https://www.das.de/de/rechtportal/verbraucherinformation/auf-den-hund-gekommen.aspx>

<sup>23</sup>Hinterwimmer (2005) shows that in certain contexts quantificational-variability-like effects may also occur with definite singular noun phrases. I briefly review his discussion in Chapter 2.

Regarding quantificational variability effects, English *one* and German *man* need to be grouped with indefinite noun phrases, as the following examples illustrate.<sup>24</sup>

- (28) *In those days, one usually/rarely lived to be 60.*  
 Available reading: ‘In those days, most/few people lived to be 60.’
- (29) *Damals ist man normalerweise/?selten älter als 60 geworden.*  
 back-then is one usually/rarely older than 60 become  
 Available reading: ‘In those days, one usually/rarely lived to be 60.’  
 (based on Malamud 2007:6)

The impersonal readings of *ich* and *du*, analogously to impersonal *man*, also show quantificational variability effects to some degree.

- (30) *Ich muss als Bauer normalerweise/?selten mehr als drei Kühe haben.*  
 I must as farmer usually/rarely more than three cows have
- (31) *Du musst als Bauer normalerweise/?selten mehr als drei Kühe haben.*  
 I must as farmer usually/rarely more than three cows have

Examples (30) and (31) both have an interpretation involving quantificational variability, which can be paraphrased by nominal quantification: ‘Most/few farmers have to own more than three cows’. And since the availability of quantificational variability effects is connected to the semantic make up of the noun phrase, this parallel further supports the truth-conditional equivalence of impersonally used *ich*, *du*, and *man*.

However, certain restrictions seem to be in place for *ich* and *du*: native speakers perceive the quantificational variability interpretation for *selten* (Engl. ‘seldom’) in (30) and (31) as odd (*pace* Malamud 2006, 2007). In the course of this thesis, quantificational variability effects only play a secondary role. As a result, I leave this contrast for further research.<sup>25</sup>

Note that quantificational variability effects do not arise obligatorily. Examples (30), (31), and (32) can be interpreted with impersonally or referentially interpreted *ich* or *du* and impersonally interpreted *man*, respectively, without having *normalerweise* (Engl. ‘usually’) and *selten* (Engl. ‘seldom’) quantify over farmers (cf. Drewery 1998; Dobrovie-Sorin 2001).

- (32) *Man muss als Bauer normalerweise/selten mehr als drei Kühe haben.*  
 one must as farmer usually/rarely more than three cows have

The impersonal interpretation shared by (30), (31), and (32) can be paraphrased as

<sup>24</sup>In fact, quantificational variability effects are observed for impersonal pronouns cross-linguistically. Cf. e.g. Chierchia (1995b) for Italian *si* and Alonso-Ovalle (2000, 2002) for Spanish *se*.

<sup>25</sup>This in some sense fits observations made for Spanish in Alonso-Ovalle (2000, 2002). He argues that the impersonal reading of second person singular *pro* does not show quantificational variability effects, while the Spanish impersonal pronoun *se* does.

‘For farmers it is usually/rarely the case that they have the obligation to have more than three cows’.<sup>26</sup>

To summarize this subsection, there seems to be good evidence that the impersonal use of *ich* and *du* and the impersonal pronoun *man* are truth-conditionally equivalent. This assumption is further supported by the possibility to switch between pronominal forms, by their shared restriction regarding generalizations about animate individuals, and by their nearly parallel behavior regarding quantificational variability effects. The truth-conditional equivalence between the impersonal use of *ich* and *du* and the impersonal pronoun *man* will be used as a starting point for a formal analysis of these readings in Chapter 2.

### 1.2.3 Impersonally vs. referentially used *ich* and *du*

While the impersonal uses of *ich* and *du* behave semantically like the impersonal pronoun *man*, on the surface, i.e. morphosyntactically, they are indistinguishable from referentially used occurrences. One of the immediate consequences of this is that any example that illustrates an impersonal use in principle also allows for an interpretation in which the pronouns are interpreted referentially, see (33) and (34).

- (33) *Ich kann als Spieler nicht einfach nach Minneapolis wechseln!!!*  
 I can as player not simply to Minneapolis change  
 Impersonal use: ‘As a player, one can’t simply transfer to Minneapolis!’  
 Referential use: ‘As a player, I can’t simply transfer to Minneapolis!’<sup>27</sup>
- (34) *Damals konntest du ein guter Mensch sein und trotzdem  
 back-then could you a good person be and nevertheless  
 Wahlkämpfe gewinnen.*  
 elections win  
 Impersonal use: ‘Back then, one could be a good person, and nevertheless win elections.’  
 Referential use: ‘Back then, you (addr) could be a good person, and nevertheless win elections.’  
 (Malamud 2012:10)

The same is true for the impersonal use of English *you*. Example (35) (repeated from above) allows *you* to be interpreted referentially; however, this results in the implausible interpretation that the addressee lived two hundred years ago, and went into the forest to get firewood then.

<sup>26</sup>The interpretations of (30) and (31) with referentially used *ich* and *du* can be translated as ‘As a farmer, I usually/rarely have the obligation to have more than three cows’ and ‘As a farmer, you (addr.) usually/rarely have the obligation to have more than three cows’, respectively.

<sup>27</sup><http://www.footballforum.de/community/brett-farve-der-naechste-versuch-t4671-s360.html>

- (35) *Two hundred years ago, you used to go into the forest when you wanted firewood for yourself.*  
(Kitagawa and Lehrer 1990:744)

Regardless of the implausibility of the referential interpretation, the crucial observation is that both readings are available, which means that also for English *you*, the two uses are not distinguished on the level of morphosyntactic form.

As should have been evident from the preceding subsection, their morphosyntactic form is the only aspect in which the impersonal and the referential uses are alike. The strong intuition that they contribute different truth-conditional content is reflected in their divergent behavior in the following three observations.

First, in indirect speech, the form of an impersonally used pronoun does not have to be shifted (cf. Kitagawa and Lehrer 1990). Note that in (36-b) and (37-b), Mary can report Peter's statement—containing *you* and *du*, respectively—verbatim.

- (36) a. Peter to Mary: *Two hundred years ago, you used to go into the forest when you wanted firewood for yourself.*  
b. Mary reporting to Paul: *Peter said that, two hundred years ago, you used to go into the forest when you wanted firewood for yourself.*
- (37) a. *Vor zweihundert Jahren bist du für Feuerholz in den Wald gegangen.*  
ago two-hundred years are you for fire-wood in the forest gone  
'Two hundred years ago you went into the forest to get firewood.' (e.g. Peter to Mary)  
b. *Peter hat gesagt, dass du vor zweihundert Jahren für Feuerholz in den Wald gegangen bist.*  
Peter has said that you ago two-hundred years for fire-wood in the forest gone are  
'Peter said that two hundred years ago you went into the forest to get firewood.' (e.g. Mary reporting to Paul)

For the referential uses of first and second person singular pronouns, it is a well-known fact that when they are reported in indirect speech, the pronouns have to be replaced with different referential expressions to refer to the same individual as in the original utterance.

- (38) a. Peter to Mary: *I like you.*  
b. Mary reporting to Paul: *Peter said that #I/he likes me.*

Whenever the referential readings are forced either by context, or from being embedded under verbs of saying to change their referents, the impersonal pronouns are immune to a shift in reference. This suggests that the semantic contribution of the impersonal

uses is not as strictly context-dependent, as the contribution of the referential uses. The semantic contribution of the referential readings will be discussed in Section 1.5.

The second observation is that the referential uses do not share the possibility to freely substitute pronominal forms, as was discussed for the impersonal uses in Section 1.2.2. In the referential reading, a change in form results in a change in referent, see (39).

- (39) *Ich war gestern einkaufen. Du hast dir einen neuen Rock gekauft.*  
 I was yesterday shopping you have yourself a new skirt bought  
 Means: ‘I was shopping yesterday. You bought a new skirt.’

Cannot mean: ‘I was shopping yesterday. I bought a new skirt.’

The final, third difference between the impersonal and referential uses is that the referential uses behave like definite noun phrases and other referential expressions with respect to quantificational variability effects (cf. Section 1.2.2). Examples (40) and (41) only have the multiple-lives interpretation for the speaker and the addressee.

- (40) *Ich bin normalerweise/<sup>?</sup>selten älter als 60 geworden.*  
 I am usually/rarely older than 60 become  
 ‘I usually/rarely lived to be 60.’

- (41) *Du bist normalerweise/<sup>?</sup>selten älter als 60 geworden.*  
 you are usually/rarely older than 60 become  
 ‘You (addr.) usually/rarely lived to be 60.’

The divergent behavior of the impersonal and referential uses observed above suggests not only that the two uses contribute different semantic content, but that the referential uses pattern with definite noun phrases while the impersonal uses pattern with indefinite noun phrases. This observation plays a crucial role in analyzing the contribution of the impersonal uses in Chapters 2 and 4.

Up until this point, the impersonal use and the referential use of first and second person singular pronouns have been presented as if they exhaust the spectrum of uses that can be found for these pronouns. However, Bennis (2004), Zeijlstra (2008), and Gruber (2011) discuss cases of second person singular pronouns which they analyze as neither standardly referential, nor impersonal, but as a distinct, third type of use. Gruber (2011) gives the following example.<sup>28</sup>

- (42) A journalist asks Kate Winslet how she felt when she received the Oscar. She says: *You are just completely overwhelmed, you can’t believe that this is actually happening to you, and you are simply very grateful.*  
 (Gruber 2011:355)

<sup>28</sup>Bennis (2004) and Zeijlstra (2008) discuss these readings for the weak second person singular *je* in Dutch. Gruber (2011) reports finding this reading in “a number of languages”.

The characteristic property of these cases is that the speaker uses a second person singular pronoun to report subjective experiences, i.e. to talk about herself. Hence, Bennis, Gruber, and Zeijlstra argue that these examples involve shifted directly referential uses of second person singular pronouns: instead of referring to the addressee, the second person pronoun directly refers to the speaker.

I do not agree with this analysis. Even though Kate Winslet clearly reports her subjective feelings and experiences, she does not use the second person singular pronoun referentially. It seems to me that this use of *you* should also be analyzed as an impersonal use: Kate Winslet reports her subjective experiences as if it were a general observation applicable to all individuals in the same position as herself (e.g. other Oscar winners). This is supported by the infelicity of the continuation in (43).

(43) #... *But this is only how I felt. Others don't feel this way, of course.*

The same observation can be made for dedicated impersonal pronouns, e.g. German *man* and English *one*, which are also frequently used to present a subjective experience as a general observation (cf. Sections 2.2 and 4.3). So, to sum up, even though impersonally used *ich* and *du* are morphologically indistinguishable from their referential uses, there are good reasons to assume that their semantic contributions differ substantially. This should be reflected in any analysis of the two uses.

#### 1.2.4 A note on non-declarative sentences

In the course of this thesis only declarative sentences containing impersonally interpreted *ich* or *du* that are used assertorically will be considered. This decision was made to keep the discussion of the impersonal uses as simple as possible. Considering other sentence or speech act types would complicate matters considerably. However, this is not to say that impersonal uses do not occur in non-declarative sentences or non-assertoric speech acts. Example (44) illustrates impersonally interpreted *ich* in an interrogative sentence expressing a question, and example (45) illustrates impersonally interpreted *du* in a conditional imperative.

(44) *Was bringt es mir als Paar in einer Location zu feiern wo man  
 what brings it me.DAT as pair at a location to party where one  
 alleine ist aber dafür eventuell um 0.00 Uhr die Musik auf  
 alone is but in-turn maybe at 0.00 o'clock the music at  
 Zimmerlautstärke stellen muss?  
 low-volume put must  
 'What is the gain for a bridal couple to party at a location where one is alone,  
 but in turn may have to turn down the music at midnight?'*<sup>29</sup>

<sup>29</sup><http://www.hochzeitsforum.de/hochzeit-plz-5/26779-kommandeursburg-wer-hat-dort-gefeiert.html>

- (45) *Wenn du als Katze etwas angestellt hast, dann Sorge ganz schnell dafür,*  
 if you as cat got-into-mischief then see.IMP very fast to  
*dass es so aussieht, als hätte es der Hund verbrochen.*  
 it that it like looks-as-if had it the dog done  
 ‘If you get into trouble as a cat, then see to it as fast as possible that it looks  
 as if the dog did it.’<sup>30</sup>

An in-depth investigation of examples like (44) and (45) requires a detailed look at the semantics of interrogative and imperative sentences which is left for further research.

It has to be noted, however, that these kinds of examples are not rare exceptions, but seem to occur nearly as frequently as examples of declarative sentences. Specifically, the use of *ich* in “general questions” may be frequently found e.g. on internet sites where people can ask for advice. Consider examples (46) and (47).

- (46) *Worauf kommt es beim Rafting an, wenn ich als Gruppe unterwegs bin?*  
 on-what depends it at-the rafting PRT if I as group on-a-trip be  
 ‘What does one have to keep in mind when going rafting as a group?’<sup>31</sup>
- (47) *Was muss ich als Empfänger wissen?*  
 what must I as addressee know  
 ‘What does one have to know as an addressee?’<sup>32</sup>

It could be argued that examples (46) and (47) do not really constitute examples of impersonal uses of *ich* since the author could have formulated the question from the point of view of an interested reader. Whether this is a viable analysis of this data depends on how “expressing a statement from the point of view of another person” is spelled out, and how the intuition is dealt with that the speaker—in formulating the question from the point of view of another—did not have a specific individual in mind, but possibly all potentially interested readers. A detailed investigation along these lines is again left for further research.

## 1.3 Data discussion – part II: Co-occurring linguistic material

### 1.3.1 The effect of co-occurring linguistic material

In this part of the data discussion, the interaction of impersonal uses with co-occurring linguistic material is addressed. Specifically, the data is reconsidered with respect to the question of which linguistic material has a positive effect on the availability of an

<sup>30</sup><http://asilenobiles.beepworld.de/sprueche.htm>

<sup>31</sup><http://www.sportlerfrage.net/frage/worauf-kommt-es-beim-rafting-an-wenn-ich-als-gruppe-unterwegs-bin>

<sup>32</sup><http://www.hin.ch/support/global/was-muss-ich-als-empfänger-wissen/>

impersonal interpretation of *ich* and *du*, i.e. a supporting effect, and which material has a negative effect, i.e. a blocking effect.

Let us first establish which linguistic material co-occurs frequently with impersonal readings of *ich* and *du*. Considering the data discussed in Section 1.2, this concerns *als*-phrases, discourse particles (e.g. *doch* and *ja*), and expressions inducing modal sentential contexts (i.e. an overt modal or a conditional sentence structure).<sup>33</sup> Consider, for instance, examples (48) and (49) repeated from Section 1.2, which show all of the frequently co-occurring material.<sup>34</sup>

- (48) *Ich kann doch als Brautpaar nicht von meinen Gästen erwarten, dass sie mir quasi die Feier finanzieren!*  
 I can PRT as bridal-couple not from my guests expect that  
 they me more-or-less the party finance  
 'A bridal couple can't expect their guests to more or less pay for the party!'<sup>35</sup>
- (49) *Du kannst als Frau doch nicht erwarten, dass dir jeder Kerl hinterher rennt.*  
 you can as woman PRT not expect that you every guy  
 after chases  
 'A woman can't expect every guy to chase after her.'<sup>36</sup>

Given that *als*-phrases, discourse particles, and expressions inducing modal sentential contexts appear so frequently in the naturally occurring examples in Section 1.2, it could be assumed that they are necessary for the impersonal interpretation to arise at all. This is not the case, though. Consider the following two examples.

- (50) *?Vor zweihundert Jahren habe ich für Feuerholz einfach einen Baum gefällt.*  
 ago two-hundred years have I for firewood simply a tree  
 cut-down  
 'Two hundred years ago, people simply cut down a tree to get firewood.'

<sup>33</sup>I use the phrase “modal sentential context” very naively in this case. It is supposed to cover only overt modal material. The presence of a covert modal element, e.g. a covert modal as assumed by Kratzer (1986), or a generic operator with a modal interpretation in the sense of e.g. Krifka et al. (1995), is not taken into account at this point.

<sup>34</sup>All *als*-phrases in the examples found in this section are intended to be read without stress on the associated noun phrase. When the noun phrase is focused, alternatives to the noun phrase are made salient (cf. Rooth 1995, for an analysis of focus), and further affect which readings are available for the examples. For reasons of simplicity, I leave aside all interpretations other than those arising from unstressed *als*-phrases.

<sup>35</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

<sup>36</sup>[http://forum.gofeminin.de/forum/couple1/\\_f64874\\_couple1-Wie-kann-ich-ihm-zeigen-dass-ich-ihn-wirklich-mag-razz-AMOUR.html#698995](http://forum.gofeminin.de/forum/couple1/_f64874_couple1-Wie-kann-ich-ihm-zeigen-dass-ich-ihn-wirklich-mag-razz-AMOUR.html#698995)

- (51) *Vor zweihundert Jahren hast du für Feuerholz einfach einen Baum*  
 ago two-hundred years have you for firewood simply a tree  
*gefällt.*  
 cut-down  
 ‘Two hundred years ago, people simply cut down a tree to get firewood.’

Neither (50), nor (51) contains an *als*-phrase, a discourse particle, or overt material inducing a modal sentential context. Nevertheless, it is possible to interpret *ich* and *du* impersonally.<sup>37</sup> The bias towards the impersonal interpretation of *ich* and *du* arises because of the temporal adverbial *vor zweihundert Jahren* (Engl. ‘two hundred years ago’). But, as (48), (49), and other examples in Section 1.2 show, temporal adverbials are also not necessary for the impersonal interpretation to arise.

Nevertheless, what seems to be the case is that *als*-phrases, discourse particles, adverbials etc. support the availability of the impersonal interpretation, and in some sense bias the hearer (or reader) toward it. A possible explanation for this is that this material restricts either the set of individuals, or the kind of circumstance for which the generalization is claimed to hold. Since there are very few, if any, generalizations that can be stated about animate individuals irrespective of any qualifying information, the lack of restricting material may cause impersonal readings of *ich* and *du* to be either strongly dispreferred, or even completely unavailable.

If that were indeed the case, one would expect that if a sentence contains no such pointers, the general bias towards the referential interpretation of *ich* and *du*—the referential uses by far outnumber the impersonal uses in written and spoken language—blocks the impersonal interpretation. This is illustrated in (52).

**Context:** A and B walk along a street. They see someone knock over bikes for fun. Seeing this A exclaims:

- (52) A: *Sowas mach ich doch nicht!*  
 something-like-that do I PRT not  
 Available – A: ‘I don’t do that!’  
 Unavailable – A: ‘You don’t do that!’/ ‘One doesn’t do that!’

Another crucial observation regarding co-occurring material is that some expressions may effectively block the availability of the impersonal use. In Section 1.2 it was observed that in episodic statements, personal pronouns may only be interpreted referentially. Those linguistic expressions that may block the impersonal interpretation are those that have the potential to promote an episodic interpretation. Expressions of this kind have in common that they restrict the content of a sentence “enough” to suggest a description of a specific, single situation.

<sup>37</sup>The impersonal uses of *ich* and *du* are sensitive to perfect tense, and especially for *ich* the impersonal interpretation seems to be less readily available. See the discussion on perfect tense below.

(53) *Generalization on blocking expressions:*

An expression which restricts the content of a sentence to a specific situation promotes an episodic interpretation of a sentence, and therefore promotes the referential interpretation of personal pronouns, while blocking the impersonal interpretation.

Expressions that contribute this kind of meaning are e.g. personal pronouns in their referential interpretation and certain spatio-temporal adverbials. Note, however, that no expressions may be taken as definitive signs for an episodic statement; no general restriction against generalizations about specific places or points in time exists. Conversely, sentences which are intended as episodic statements may contain little to no material which has specific reference, or explicitly locates the reported episodic event.<sup>38</sup>

The rest of this section aims at a more detailed discussion of the effect that the following material (in the broadest sense) has on the availability of the impersonal interpretation of *ich* and *du*.

- spatial and temporal adverbials
- co-occurring referentially interpreted personal pronouns
- perfect tense and subjunctive marking on the verb
- focus/stress on the personal pronoun
- the argument position occupied by the personal pronoun (only: *ich*)

*Als*-phrases, discourse particles, and those co-occurring expressions inducing modal sentential contexts are further discussed in later parts of this thesis. The modal sentential contexts are the central topic of Chapter 3. The function and semantic contribution of *als*-phrases, as well as the connection between the impersonal readings and co-occurring discourse particles are discussed in the Appendix.

### 1.3.2 Spatial and temporal adverbials (and context)

Spatial and temporal adverbials can have both a negative and a positive impact on the availability of impersonal readings, depending on their content.

In general, the native speakers that I consulted preferred an episodic reading for a sentence if the adverbials contained in that sentence restricted the sentential content to specific times or places. Intuitions are subtle, though, and it seems that with the right kind of contextual support, a generic interpretation can be obtained for most sentences, however implausible the intended interpretation may seem at first glance.

For practically all native speakers I consulted, temporal adverbials which denote a specific time block an impersonal interpretation. In the following two examples, the

<sup>38</sup>It is sometimes assumed that for most utterances, the addressee pragmatically recovers material from the discourse context which restricts a sentence to give an episodic statement. Cf. Recanati (1989), Bach (1994).

expressions *heute* (Engl. ‘today’) and *um halb zwei* (Engl. ‘at half past one’) together restrict the sentence to a particular, short time interval.

- (54) *Heute habe ich um halb zwei für Feuerholz einen Baum gefällt.*  
 today have I at half two for firewood a tree cut-down  
 Only available: ‘Today at half past one, I cut down a tree to get firewood.’
- (55) *Heute hast du um halb zwei für Feuerholz einen Baum gefällt.*  
 today have you at half two for firewood a tree cut-down  
 Only available: ‘Today at half past one, you (add.) cut down a tree to get firewood.’

Even with strong contextual support, e.g. if the existence of a norm, rule, or tradition is assumed which says that on a single, specific day people in general have to cut down a tree for firewood at a specific time, the impersonal reading is not readily available.

If spatial or temporal adverbials refer to a sufficiently large amount of space or time, they can have the opposite effect. Then they support the impersonal reading. For example, (56-a) out-of-the-blue is only interpretable with a referentially interpreted *ich* if the temporal adverbial is omitted, see (56-b).

- (56) a. *?Vor zweihundert Jahren habe ich für Feuerholz einen Baum gefällt.*  
 ago two-hundred years have I for firewood a tree cut-down  
 ‘Two hundred years ago, people cut down a tree to get firewood.’
- b. *Ich habe für Feuerholz einen Baum gefällt.*  
 I have for firewood a tree cut-down  
 Only available: ‘I cut down a tree to get firewood.’

The same is true for second person singular *du*.

- (57) a. *Vor zweihundert Jahren hast du für Feuerholz einen Baum gefällt.*  
 ago two-hundred years have you for firewood a tree cut-down  
 ‘Two hundred years ago, people cut down a tree to get firewood.’
- b. *Du hast für Feuerholz einen Baum gefällt.*  
 you have for firewood a tree cut-down  
 Only available: ‘You cut down a tree to get firewood.’

Alonso-Ovalle (2000) argues that the Spanish second person singular null pronoun *pro2* always requires a locative expression to license its impersonal use, even if temporal and aspectual marking would support an impersonal interpretation.

- (58) a. *En ese departamento pro2 trabajas como un esclavo.*  
 in that department pro2 work.2SG like a slave  
 ‘In that department you (imp.) work like a slave.’  
 (Alonso-Ovalle 2000:4)

- b. *pro2 trabajas como un esclavo.*  
 pro2 work.2SG like a slave  
 Unavailable: ‘You (imp.) work like a slave.’  
 Available: ‘You (add.) work like a slave.’  
 (Alonso-Ovalle 2000:5)

For German, the restriction is not as strong. The following example again illustrates that spatial or temporal adverbials are not needed to license the impersonal uses of personal pronouns.<sup>39</sup>

- (59) *Ich werfe doch nicht einen fremden Welpen auf den Rücken.*  
 I throw PRT not a of-someone-else puppy onto the back  
 ‘One doesn’t throw someone else’s puppy onto its back.’<sup>40</sup>

A similar supporting effect to that of adverbials can be observed for the linguistic and extralinguistic context. Example (60) illustrates the effect observable for the linguistic context: the part before the colon sets the topic to teams that want to be successful and their rules. This biases the interpretation of the statement after the colon. Hence, the impersonal interpretation for *ich* is available even though no material inside this sentence biases it towards the impersonal interpretation.

- (60) *Die wichtigste Regel für Mannschaften, die erfolgreich sein wollen:*  
 the most-important rule for teams that successful be want  
*Ich gehe motiviert auf den Platz.*  
 I go on the field  
 ‘The most important rule for teams that want to be successful: One enters the field motivated.’

Impersonal interpretations are also more readily available for both pronouns when a non-verbal preparatory context is provided. The extralinguistic context is not as powerful as either adverbials, or the linguistic context, though. As was shown in Section 1.3.1, sentences in which a personal pronoun does not co-occur with overt, biasing material cannot be interpreted impersonally, regardless of contextually given supporting material (cf. example (52)). However, the following context-utterance combination allows for an impersonal interpretation of *ich*.

**Context:** A and B walk along a street. They see someone knock over bikes for fun. Seeing this A exclaims:

- (61) A: *Sowas kann ich doch nicht machen!*  
 something-like-that can I PRT not do  
 A: ‘You can’t do that!’/ ‘One can’t do that!’

<sup>39</sup>If the verb is in perfect tense adverbials may be needed to counteract the blocking effect of perfect tense marking. See example (56-b) and Section 1.3.4 below.

<sup>40</sup>Adapted from <http://mylittleworld142.blogspot.de/2011/11/hundekenner.html>

In this example, the impersonal interpretation of *ich* is further supported by the modal *kann* (Engl. ‘can’).

### 1.3.3 Co-occurring referentially interpreted personal pronouns

Similarly to spatial and temporal adverbials that restrict the sentential content to specific confined times or places, referentially interpreted personal pronouns restrict the content of a sentence to one or more specific situations, and promote an episodic interpretation of that sentence. Example (62) illustrates the effect of second person singular *du* co-occurring with first person singular *mich* (Engl. ‘me’) which is interpreted referentially. The most readily available interpretation for *du* is the referential interpretation, in parallel to *mich*.

- (62) *Du musst mich gut behandeln.*  
 you must me.ACC well treat  
 Available: ‘You (addr.) have to treat me well.’  
 Unavailable(?): ‘One should treat me well’

The effect is, again, not an absolute blocking of the impersonal interpretation of *ich* and *du*: when I consulted native speakers whether sentences like (62) could also be interpreted as general rules of conduct, they did not outright refuse, but stated that they prefer the impersonal pronoun *man* instead of *ich* or *du* to express the intended meaning.

The preference to exchange *du* with *man* disappears if the first person singular pronoun is replaced by the bare plural *Kinder* (Engl. ‘children’), see (63). Here, the impersonal, as well as the referential interpretation of *du* is available.

- (63) *Du musst Kinder gut behandeln.*  
 you must children well treat  
 Available: ‘You (addr.) have to treat children well.’  
 Available: ‘You (imp.) have to treat children well.’

Hence, it seems that general rules of conduct regarding specific, but arbitrary individuals are exceptional—in the same way that generalizations and rules regarding specific confined times or places are exceptional. This is supported by a comparable tendency to prefer a referential interpretation for *ich* or *du* when a proper name co-occurs in the sentence. In (64), the referentially interpreted personal pronoun of (62) has been replaced with the proper name *Maria*, and as for (62), the sentence was intended as a general rule of conduct regarding Maria. Yet, the native speakers that I consulted again strongly preferred a referential interpretation for *du*.

- (64) *Du musst Maria gut behandeln, sonst wird sie traurig.*  
 you must Maria well treat else becomes she sad  
 Available: ‘You (addr.) have to treat Mary well, else she gets sad.’  
 Unavailable(?): ‘You (imp.) have to treat Mary well, else she gets sad.’

To express the intended general rule of conduct, native speakers again preferred to substitute *du* with *man*.

Even more support for the exceptionality of general rules of conduct regarding specific, but arbitrary individuals comes from the observation that sentences in which *ich* or *du* co-occur with proper names of special single individuals who may have specific rules associated with them readily allow an impersonal reading of personal pronouns. Consider (65).

- (65) *Du darfst vor Elizabeth II keine Banane essen.*  
 you can in-front-of Elizabeth-II no banana eat  
 Available: ‘In the presence of Elizabeth II, you (addr.) must not eat a banana.’  
 Available: ‘In the presence of Elizabeth II, you (imp.) must not eat a banana.’

Another type of restriction exists for multiple occurrences of the same pronominal form in the same clause. This restriction addresses which of the occurrences can be interpreted impersonally if the other occurrences are interpreted referentially: intuitively, either all occurrences of the same pronominal form are interpreted impersonally, or all are interpreted referentially.

- (66) *Ich muss mich als Student respektieren.*  
 I.NOM must me.ACC as student respect  
 Available: ‘A student has to respect himself.’  
 Available: ‘I have to respect myself.’  
 Unavailable: \*‘A student has to respect me.’  
 Unavailable: \*‘As a student, I have to respect people in general.’

Curiously, though, possessive pronouns seem to behave differently with respect to this restriction. Malamud (2007) observes the following pattern for the impersonal use of *you*.

- (67) *In those days, you could marry your cousin.*  
 a. Available: Addressee could marry addressee’s cousin  
 b. Available: One could marry one’s cousin  
 c. Unavailable: \*Addressee could marry one’s cousin  
 d. Available: One could marry addressee’s cousin  
 (Malamud 2007:14)

The availability of the first two interpretations, for which all occurrences of *you* are interpreted in a uniform manner, is expected. Surprisingly, though, the fourth reading, in which *you* in subject position is interpreted impersonally and the possessive is interpreted referentially, is available as well.

The same pattern is observed for German, as well—although native speakers seem to strongly prefer an interpretation in which the second person singular forms are read uniformly.

- (68) *Du kannst doch deine Cousine heiraten.*  
 you can part your cousin marry  
 Available: ‘You (addr.) can marry your cousin.’  
 Available: ‘One can marry one’s cousin.’  
 Unavailable: \*‘You can marry one’s cousin.’  
 Available: ?? ‘One can marry your cousin.’

So far, only pronominal combinations occurring in the same clause were considered. Crucially, the restrictions observed inside a single clause do not hold for multi-clausal sentences, as exemplified by (69)–(71).

- (69) *Also, ich habe ja wenig Ahnung von Finanzen etc., aber ich kann doch als Bank/Wechselstube nicht selbst einen Preis/Wert für Währung/Geld festlegen.*  
 well I have PRT little knowledge of finances etc but I can PRT  
 as bank/exchange-office not self a price/value for currency/money  
 fix  
 ‘Well, I don’t really know anything about finances, but a financial institution can’t choose a price/ value for currency.’<sup>41</sup>
- (70) *Ich find das ist ein total doofes Argument! Ich kann doch als Brautpaar nicht von meinen Gästen erwarten, dass sie mir quasi die Feier finanzieren!*  
 I think this is a totally stupid argument I can part as  
 bridal-couple not from my guests expect that they me  
 more-or-less the party finance  
 ‘I think this is an absolutely stupid argument! The bridal couple can’t expect their guests to more or less pay for the party!’<sup>42</sup>

<sup>41</sup><http://www.kurzefrage.de/wirtschaft-finanzen/233962/stimmt-es-dass-jede-bank-und-wechselstube-ihren-eigenen-wechselkurse>

<sup>42</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

- (71) *Ich fand es wirklich peinlich und unverschämt mit Kunden*  
 I found it really embarrassing and impolite with customers  
*so umzugehen. Ich kann doch als Dienstleister meine Kunden*  
 like-that to-treat. I can PRT as service-provider my customers  
*nicht so ignorieren.*  
 not like-that ignore  
 ‘I found it really embarrassing and impolite that they treat their customers  
 like that. A service provider can’t ignore his customers in this way.’<sup>43</sup>

Examples (69)–(71) illustrate a “shift” from a referential use of first person singular *ich* to an impersonal use: In the first sentence/clause of the examples, *ich* is used referentially. In the second sentence, the speaker switches to the impersonal reading, and all further occurrences of first person singular pronouns are interpreted impersonally. These examples have in common, that the first sentences containing the referential use express the speaker’s attitude regarding the situation under discussion: in (69) the speaker states that he has limited knowledge regarding the topic under discussion, in (70) the speaker comments on a previous utterance in the discussion, and in (71) the speaker directly comments on the situation she is describing.

Similarly, impersonally interpreted *ich* and *du* may be embedded under attitude predicates with the speaker as attitude holder, see (72) and (73).

- (72) *Ich denke, volle Aufklärung wird es gewiss nie geben, denn ich*  
 I think full clarification will certainly never be-found, because I  
*kann als Firma ja einem Labor in Polen einen Test*  
 can as company PRT a laboratory in Poland a test  
*in Auftrag geben und mir eine Rechnung über eine LKW-Miete schreiben*  
 commission and me a receipt for a truck-lease write  
*lassen.*  
 let  
 ‘I think this will never be fully clarified because a company can commission a  
 test from a laboratory in Poland and ask for a receipt for the lease of a truck.’<sup>44</sup>
- (73) *Ich meine, du kannst dein Kind ja nicht auf Schritt und Tritt verfolgen.*  
 I mean you can your child PRT not wherever-she-goes follow  
 ‘I mean, one can’t always follow one’s child around.’<sup>45</sup>

The final observation regarding the interaction between impersonally and referentially interpreted personal pronouns is similar, but not directly connected to the previous discussion: it seems to be the case that in an ongoing discourse, the impersonal interpretation is unavailable if the subject matter is a particular issue regarding the speaker or addressee, respectively. Consider (74) and (75).

<sup>43</sup><http://www.qype.com/place/529390-Vorher-Nachhair-Hagen>

<sup>44</sup><http://www.hundeforum-chat.de/hundeforum/print.php?threadid=1535&boardid=27&styleid=1&page=4>

<sup>45</sup><http://de.answers.yahoo.com/question/index?qid=20070928054833AA12RG0>

**Scenario:** A and B are at a sea-food restaurant.

- (74) A: *Was soll ich bestellen?*  
 what should I order  
 ‘What do you think I should get to eat?’  
 B: *Hier isst du am besten Shrimps.*  
 here eat you best shrimps  
 Available: ‘It’s best for you (addr.) to order shrimps in this place.’  
 Unavailable: ‘In this place, it’s best if you (imp.) order shrimps.’

**Scenario:** A and B are at a sea-food restaurant. A knows that B is on a diet.

- (75) A: *Was bestellst du in so einem Restaurant?*  
 what order you in such a restaurant  
 ‘What do you order in this kind of restaurant?’  
 B: *Am besten bestelle ich da Shrimps.*  
 best order I there shrimps  
 Available: ‘It’s best for me to order shrimps in this kind of restaurant.’  
 Unavailable: ‘In this kind of restaurant, it’s best if one orders shrimps.’

Note that in case the impersonally used personal pronouns in B’s answers are substituted by the impersonal pronoun *man*, the B-examples can be interpreted as generalizations, as intended.

### 1.3.4 Perfect tense and subjunctive marking on the verb

Further interactions can be observed between the availability of the impersonal interpretations of *ich* and *du* and (i) perfect tense and (ii) subjunctive marking on the verb.

When confronted with data in which *ich* or *du* are intended to be interpreted impersonally, native speakers usually prefer present tense marking on the verb over perfect tense marking. Whenever the verb is in perfect tense, the impersonal interpretation is not strictly blocked, but the interpretation seems to require more supporting material (cf. Section 1.3.2). Example (76) repeats and extends example (51).

- (76) a. *Ich habe für Feuerholz einfach einen Baum gefällt.*  
 I have for firewood simply a tree cut-down  
 Available: ‘I simply cut down a tree to get firewood.’  
 Unavailable: ‘One simply cut down a tree to get firewood.’  
 b. *?Vor zweihundert Jahren habe ich für Feuerholz einfach einen Baum gefällt.*  
 ago two-hundred years have I for firewood simply a tree cut-down  
 Available but odd: ‘Two hundred years ago, I simply cut down a tree to

get firewood.’

Available: ‘Two hundred years ago, one simply cut down a tree to get firewood.’

- c. *Vor zweihundert Jahren habe ich für Feuerholz einfach nur einen Baum fällen müssen.*  
 ago two-hundred years have I for firewood simply only a tree cut-down must

Available but odd: ‘Two hundred years ago, I just had to cut down a tree to get firewood.’

Available: ‘Two hundred years ago, one just had to cut down a tree to get firewood.’

- d. *Vor zweihundert Jahren habe ich als Bauer für Feuerholz einfach nur einen Baum fällen müssen.*  
 a tree cut-down must

Available but odd: ‘Two hundred years ago, as a farmer, I just had to cut down a tree to get firewood.’

Available: ‘Two hundred years ago, a farmer just had to cut down a tree to get firewood.’

A general requirement for the availability of impersonal readings with perfect tense seems to be the presence of a temporal frame-setting adverbial. Compare (77) to (76-d).

- (77) *Ich habe als Bauer für Feuerholz einfach nur einen Baum fällen müssen.*  
 I have as farmer for firewood simply only a tree cut-down must

Available: ‘As a farmer, I just had to cut down a tree to get firewood.’

Unavailable: ‘A farmer just had to cut down a tree to get firewood.’

The two examples differ only with respect to the presence of the temporal adverbial *vor zweihundert Jahren* (Engl. ‘two hundred years ago’). For *ich* in example (76-d), the impersonal interpretation is available, while in contrast, the only available interpretation for *ich* in (77) seems to be the referential interpretation.

A possible reason for the seemingly obligatory adverbial in examples with perfect tense is connected to the interpretation of perfect tense in German. Von Stechow (1999) argues that perfect tense marking in German does not express aspectual information, i.e. it is not specified for perfective or imperfective aspect.<sup>46</sup> As observed in the literature on generic sentences for languages that encode aspectual information

<sup>46</sup>I am aware that the analysis in von Stechow (1999) is controversial. His analysis, however, provides a direct link to discussions about aspectual marking and dedicated impersonal pronouns. A detailed discussion of the properties of the German perfect tense is beyond the scope of this thesis, though.

morphologically, the availability of a generic/impersonal interpretation is connected to imperfective marking on the verb (Dahl 1995; Cinque 1988; D’Alessandro and Alexiadou 2002). Given this observation, it might be the case for German that temporal adverbials affect the aspectual interpretation of perfect tense in such a way that the impersonal interpretation is more readily available.<sup>47</sup>

In contrast to perfect tense, subjunctive marking (i.e. Konjunktiv II) on the verb completely and strictly blocks the availability of an impersonal interpretation for both *ich* and *du*.

- (78) a. *Ich trinke doch als Sportler täglich einen Proteinshake.*  
 I drink PRT as athlete daily a protein-shake  
 Available: ‘As an athlete, I drink a protein shake daily.’  
 Available: ‘An athlete drinks a protein shake daily.’
- b. *Ich würde doch als Sportler täglich einen Proteinshake trinken.*  
 I would PRT as athlete daily a protein-shake drink  
 Available: ‘If I were an athlete, I would drink a protein-shake daily.’  
 Unavailable: ‘An athlete would drink a protein shake daily.’
- (79) a. *Du trinkst ja als Sportler täglich einen Proteinshake.*  
 you drink PRT as athlete daily a protein-shake  
 Available: ‘As an athlete, you drink a protein shake daily.’  
 Available: ‘An athlete drinks a protein shake daily.’
- b. *Du würdest ja als Sportler täglich einen Proteinshake trinken.*  
 you would PRT as athlete daily a protein-shake drink  
 Available: ‘If I were an athlete, I would daily drink a protein-shake.’  
 Unavailable: ‘An athlete would drink a protein shake daily.’

For (78-b) and (79-b), *ich* and *du* can only be interpreted referentially.<sup>48</sup>

Note that the corresponding sentence in which *ich/du* are replaced by *man* does have the intended reading.

- (80) *Man würde als Sportler täglich einen Proteinshake trinken.*  
 one would as athlete daily a protein-shake drink  
 Available: ‘An athlete would drink a protein shake daily.’

Since subjunctive mood counts among the irrealis moods, one could assume that irrealis moods, in general, disallow impersonal interpretations of *ich* and *du*. However—as briefly discussed in Section 1.2, imperative sentences may contain impersonally used *du*. Hence, if one counts imperative mood among irrealis moods, irrealis moods do not block the impersonal use in general.

<sup>47</sup>I thank Magdalena Kaufmann (p.c.) for pointing this out to me.

<sup>48</sup>German *als*-phrases interact with the subjunctive. For the surface order where the subjunctive precedes the *als*-phrase, the preferred interpretation for the *als*-phrase is as a restriction on the interpretation of the subjunctive. Cf. Appendix A1.

As far as I am aware, a possible interaction between impersonally interpreted English *you* and the subjunctive has not yet been investigated. This interaction, as well as the blocking effect of subjunctive marking in German are not investigated in detail in this thesis for reasons of space, but are left for further research. The blocking effect of subjunctive marking in German as such, though, plays a role in refuting a counterfactuals-based analysis of the impersonal uses in Section 1.6.

### 1.3.5 Stressed *ich* and *du*

Intonation and stress patterns also have an influence on the available interpretations of *ich* and *du*: stressing either of the two pronouns has the immediate and clear effect of blocking the impersonal interpretation.

As discussed in the previous subsection, the unstressed versions of examples (81) and (82) allow for an impersonal interpretation of *ich* and *du*. However, stressed *ich* and *du* in (81) and (82) may only be interpreted referentially (upper case marks stress).

(81) *Vor zweihundert Jahren habe ICH für Feuerholz einen Baum gefällt.*  
 ago two-hundred years have I for firewood a tree cut-down  
 ‘Two hundred years ago, I cut down a tree to get firewood.’

(82) *Vor zweihundert Jahren hast DU für Feuerholz einen Baum gefällt.*  
 ago two-hundred years have you for firewood a tree cut-down  
 ‘Two hundred years ago, you (addr.) cut down a tree to get firewood.’

The same sensitivity to stress is also observed for English *you*. In the following example, stressed *you* can also only be interpreted referentially.

(83) *If YOU leave the house in the winter, you have to put on a coat.*  
 (Gruber 2011:349)

Gruber (2011) discusses the availability of impersonal readings for second person singular pronouns for various languages, including German and English. She observes that the Bavarian dialects of German, which are pro-drop variants, only allow for an impersonal interpretation when the pronoun is dropped. Overt second person pronouns are always interpreted addressee-referentially.

(84) *Waun-st pro im Winta ausse gehst, daun muast pro di woarm*  
 if-2.SG pro in-the winter out go then must pro yourself warm  
*aunziagn.*  
 dress  
 Available: ‘If you (imp.) go out in winter, you have to wear something warm.’  
 Available: ‘If you (addr.) go out in winter, you have to wear something warm.’  
 (Gruber 2011:350)

- (85) *Waun-st du im Winta ausse gehst, daun muast pro di woarm*  
 if-2.SG you in-the winter out go then must pro yourself warm  
*aunziagn.*  
 dress  
 Unavailable: ‘If you (imp.) go out in winter, you have to wear something warm.’  
 Available: ‘If you (addr.) go out in winter, you have to wear something warm.’  
 (Gruber 2011:350)

Alonso-Ovalle (2000) reports the same pattern for Spanish, which is also a pro-drop language: Only the second person singular null pronoun *pro2* may be interpreted impersonally. Overtly realized second person singular *tú* has only a referential use. This suggests that the restriction formulated above is not primarily connected to focus or stress, but to relative phonological strength (Gruber 2011).

### 1.3.6 A restriction on possible argument positions for *ich*

For first person singular *ich*, there seems to be an additional syntactic restriction regarding the availability of the impersonal use. A first approximation of this restriction, as suggested by the data, is that an impersonal interpretation is only available for *ich* in subject position, i.e. when *ich* is assigned nominative case.

- (86) *Der Trainer muss mich als Mannschaft gut behandeln.*  
 the coach must me.ACC as team well treat  
 Available but odd: ‘The coach has to treat me well, as a team.’  
 Unavailable(?): ‘A team has to be treated well by its coach.’

The impersonal interpretation of the accusative *mich* in (86) is judged to be unavailable by native speakers. However, there seem to be counter-examples to the subject/nominative restriction, cf. (87) and (88).<sup>49</sup>

- (87) *Mich interessiert als Client-Code überhaupt nicht, ob push\_back*  
 me.ACC interests as client-code at-all not whether push\_back  
*irgendwas allokkieren muß. Ich setze mein Objekt an das Ende des*  
 something allocate must. I put my object at the end of-the  
*Containers, und gut ist.*  
 container and good is  
 ‘A client-code is not at all interested in whether push\_back has to allocate something. It puts its object at the end of the container, and that’s it.’<sup>50</sup>

<sup>49</sup>Even though example (87) unambiguously expresses a generic statement, it is problematic in that it is used to state a generalization for inanimate entities (i.e. client codes). For impersonal uses of personal pronouns, this is usually not considered well-formed, see discussion on animacy in Section 1.2. One possibility to deal with this animacy mismatch is to argue that for programs, the animacy requirement is fulfilled since they can be considered “active processes”.

<sup>50</sup><http://www.c-plusplus.de/forum/282329-30>

- (88) *Mich interessiert als Konsument der Thunderbolt Anschluss nur dann,*  
 me.ACC interests as consumer the Thunderbolt interface only then  
*wenn ich günstige Peripherie daran anstecken kann.*  
 when I low-priced periphery there plug-in can  
 ‘A consumer is only interested in the Thunderbolt interface if low priced pe-  
 riphery is available for it.’<sup>51</sup>

A possible explanation for the availability of the impersonal interpretation for (87) and (88) is that non-nominative experiencers of verbs like *interessieren* (Engl. ‘to be interested in’) behave syntactically like “external arguments”, i.e. like subjects of agentive verbs (cf. Bayer 2004).

That non-nominative experiencers differ from direct objects of agentive verbs can be shown by comparing their behavior regarding nominalization. Example (89) shows that in nominalizations of a transitive agentive verb like *suchen* (Engl. ‘look for’), the direct object *die Kinder* (Engl. ‘the children’, acc.) is converted to a genitive, or appears as the argument of a prepositional *von*-phrase (Engl. ‘of’).

- (89) a. *Die Polizei sucht die Kinder.*  
 the police.NOM seeks the children.ACC  
 ‘The police is searching for the children.’  
 b. *Das Suchen der Kinder (durch die Polizei)*  
 the searching the children.GEN by the police  
 c. *Das Suchen von den Kindern (durch die Polizei)*  
 the searching of the children.DAT by the police  
 (Bayer 2004:15)

In contrast, for nominalizations of *interessieren*, the accusative marked argument does not show the same behavior. Cf. example (90).<sup>52</sup>

- (90) a. *Den Konsumenten interessiert der Thunderbolt Anschluss.*  
 the consumer.ACC interests the Thunderbolt-interface.NOM  
 ‘The consumer is interested in the Thunderbolt interface.’  
 b. \**Das Interessieren des Konsumenten (durch den*  
 the interest-taking the consumer.GEN by the  
*Thunderbolt Anschluss)*  
 Thunderbolt-interface  
 c. \**Das Interessieren von dem Konsumenten (durch den*  
 the interest-taking of the consumer.DAT by the  
*Thunderbolt Anschluss)*  
 Thunderbolt-interface

<sup>51</sup><http://www.macuser.de/forum/f47/macbook-pro-moeglicherweise-608808/index58.html>

<sup>52</sup>Example (90) is adapted from an example in Bayer (2004:16).

Consequently, examples (87) and (88) should probably be viewed as special cases of the subject restriction instead of counter-examples. Example (91), however, is a true counter-example for the subject restriction in its above formulation.

- (91) *Mein Trainer muss mich als Mannschaft gut behandeln.*  
 my coach must me as team well treat  
 Available but odd: ‘My coach has to treat me well, as a team.’  
 Available: ‘A team has to be treated well by its coach.’

Example (91) is identical to example (86) above except that the definite article in the subject noun phrase is substituted by a first person singular possessive. Therefore, it seems to suffice that some impersonally interpreted material is part of the subject of the sentence for an impersonal interpretation to be available.

An alternative perspective on the restriction is to view the impersonal use of *ich* as tied to the topic of the sentence. This analysis connects the syntactic restriction for *ich* to the general restriction that impersonally interpreted personal pronouns may not be focussed (cf. Section 1.3.5). A detailed investigation of this alternative is left for further research.

The asymmetry that the restriction found with first person singular *ich*—however it is analyzed—is not in place for second person singular *du* is illustrated by (92), which is the second person singular version of example (86) above.

- (92) *Der Trainer muss dich als Mannschaft gut behandeln.*  
 the coach must you as team well treat  
 Available but odd: ‘The coach has to treat you (addr.) well, as a team.’  
 Available: ‘A team has to be treated well by its coach.’

Native speakers judge (92) as decidedly better than the corresponding example with *ich* in (86). A reason for this asymmetry could be that the impersonal use of second person singular *du* is an older use, and is therefore better established than the impersonal use of *ich*. As a result, impersonally used *du* is available in more contexts. In Grimm and Grimm (1860)—the German dictionary by the brothers Grimm, the impersonal use of second person singular *du* is already attested for the Bavarian dialects of German.<sup>53</sup> For first person singular *ich*, they do not mention a corresponding impersonal use, which suggests that impersonally used *ich* developed more recently.

<sup>53</sup>“[U]mgekehrt sagt der landmann östlich des Lechs *du bist, du mainst, du kanst* für *man ist, man meint, man kann.*”(Grimm and Grimm 1860)

## 1.4 Data discussion – part III: Pragmatic preferences and effects

### 1.4.1 A preliminary note

In Section 1.2 it was shown that the impersonal uses of *ich* and *du* and the impersonal pronoun *man* are truth-conditionally equivalent, and that sentences containing these pronouns exclusively express generic statements. An important question that arises at this point is whether impersonally used *ich* and *du* differ from each other and from *man* in any way, or whether they are simply morphological variants that serve one and the same communicative function.

The aim of this section is to show that there are differences between impersonally used *ich*, *du*, and impersonal *man*, and that the main differences are located on the pragmatic level: First, impersonally interpreted *ich* and *du*, in contrast to *man*, each prefer a certain type of context of use. Second, there are differences regarding the pronouns' pragmatic effects. While the three pronouns as a class contrast with indefinite noun phrases in “ordinary” generic sentences in expressing additional speaker-orientation, the impersonal uses of *ich* and *du* furthermore convey that the speaker has a certain stance towards other individuals in the context.

The differences briefly sketched here are made more precise in the following subsections. Nevertheless, the discussions about the contextual preferences and pragmatic effects of the impersonal uses will take place on a rather informal and intuitive level, and will at times be rather vague. Regarding the analysis and description of emotive and expressive content and other pragmatic effects, the formal semantic and pragmatic literature is still in its infancy, and for many intuitions no established terminology exists, yet. I try to make the relevant intuitions regarding these points as clear as possible, though.<sup>54</sup>

### 1.4.2 Preferences on discourse contexts

The impersonal uses of *ich* and *du* differ with respect to their preferred contexts of use. In other words, when impersonally used *ich* and *du* occur in a sentence, the sentence has a different contextual fit, and some contexts turn out to be “inadequate” contexts of use. I argue that this effect is comparable to the “contextual fit” induced by discourse particles (cf. Zimmermann 2011a). In this contextual requirement *ich* and *du* differ from the impersonal pronoun *man* which has no preferences regarding its contexts of use.

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<sup>54</sup>All results presented in this section are based on native speakers' judgements and my own intuitions regarding the data.

The impersonal use of *ich* prefers contexts in which the generalization, rule, law, or norm that is expressed by the sentence containing the pronoun has been openly violated, or contexts in which its validity is questioned. In other words, the actions or opinions of another individual in the context are in conflict with the content of the sentence containing impersonal *ich*. I call this a “negative context”. The context-utterance-pair in (93) illustrates an impersonal reading of *ich* together with its negative context.

**Context:** “How much money does one give as a present at a wedding?” - The initial question is whether 100 euros is enough. One user argues that it is customary to adjust the amount of money to the size and cost of the wedding party held by the bridal couple. With the following utterance, another user takes issue with this claim:

- (93) *Ich find das ist ein total doofes Argument! Ich kann doch als*  
 I think this is a totally stupid argument I can PRT as  
*Brautpaar nicht von meinen Gästen erwarten, dass sie mir*  
 bridal-couple not from my guests expect that they me  
*quasi die Feier finanzieren!*  
 more-or-less the party finance  
 ‘I think this is an absolutely stupid argument! The bridal couple can’t expect  
 their guests to more or less pay for the party!’<sup>55</sup>

The speaker infers from the previous user’s post that this user thinks that a bridal couple can, in fact, expect their guests to pay their party expenses. Thus, the speaker’s opinion expressed in the second sentence in (93) is in conflict with the utterance of the previous user. This conflict constitutes the negative context.

Non-verbal, extra-linguistic contexts may also qualify as negative contexts for the impersonal reading of *ich*, see (94).

**Context:** A and B walk along a street. They see someone knock over bikes for fun. Seeing this A exclaims:

- (94) A: *Sowas kann ich doch nicht machen!*  
 something-like-that can I PRT not do  
 A: ‘You (imp.) can’t do that!’/ ‘One can’t do that!’

The speaker’s exclamation is a direct reaction to the actions of the person knocking over bikes. These actions openly violate the rule of conduct that underlies the speaker’s exclamation in (94), i.e. the rule that one should respect the private property of others.

The preference for negative contexts is further supported by the discourse particles that occur in (93) and (94). In both examples, the German particle *doch* occurs, which

<sup>55</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

signals a conflict between the sentence in which it occurs and an action or utterance in the context (cf. Zimmermann 2011a and Appendix A2).

Note, however, that the negative contexts in (93) and (94) cannot be attributed to the requirements of *doch* alone. Naturally occurring impersonal uses of *ich* can be found in utterances that do not contain *doch* or any other discourse particles, but appear in negative contexts. Consider example (95).

**Context:** A argues against the view held by others that only employers have to care about further training for their employees, and states that employees have to be proactive to learn new skills.

- (95) A: *Ich kann als Arbeitnehmer nicht erwarten, dass mir mein Arbeitgeber alles vorlegt.*  
 I can as employee not expect that me my employer everything presents  
 A: ‘An employee can not expect his employer to present him with everything.’<sup>56</sup>

The negative context for the utterance in (95) is given by the conflicting view supported by the other discourse participants that employers are fully responsible for their employee’s further training. Since in example (95) neither *doch* nor any other discourse particle is used, the negative context cannot have been required by a discourse particle. Nevertheless, impersonally used *ich* and the discourse particle *doch* seem to have the same preference for certain discourse contexts. Unfortunately, *doch* (and other German discourse particles) cannot be used as an automatic diagnostic tool detecting the required discourse contexts. This is argued for in Appendix A2.

In contrast to the preference for negative contexts, the impersonal use of *ich* is inappropriate in positive contexts; in non-negative contexts, the use of impersonally interpreted *ich* seems needlessly emotional and forceful, and is usually perceived as pragmatically odd. Compare examples (96-a) and (96-b).

**Context:** Reporting the rules of football/soccer as established by the International Football Association Board to an interested public.

- (96) a. *Ein Spieler, der vor Spielbeginn des Feldes verwiesen wird, kann nur durch einen der gemeldeten Auswechselfspieler ersetzt werden.*  
 a player who before match-start the field expelled is can only by a of-the registered substitute replaced get  
 ‘A player who is expelled from the field before the start of the match can only be replaced by a registered substitute.’<sup>57</sup>

<sup>56</sup><https://www.xing.com/net/vertrieblicheaussendienst/fuehrung-im-vertriebsaussendienst-68704/wie-hoch-sind-die-fluktuationsraten-anderer-vertriebe-18484884/36138901/>

<sup>57</sup><http://www.ubbo-voss-sr-lehrarbeit.de/fussballregeln-2011-2012/fussballregeln-spielerzahl.html>

- b. #*Ich kann als Spieler, der vor Spielbeginn des Feldes verwiesen wird, nur durch einen gemeldeten Auswechselspieler ersetzt werden.*

I can as player who before match-start the field expelled am only by a registered substitute replaced get

‘A player who is expelled from the field before the start of the match can only be replaced by a registered substitute.’

In the context for (96-a) and (96-b), the speaker/author can assume—based on the source—that the validity of the rules is not questioned by someone in the context, and that no open violation of this specific rule is part of the discourse context. As (96-a) shows, this context is perfectly compatible with the use of an ordinary generic sentence. In contrast, uttering a sentence containing impersonally interpreted *ich*, i.e. example (96-b), in the same context is pragmatically odd. I argue that this is the case since the preference for a negative context is not fulfilled.<sup>58</sup>

Impersonally interpreted *du*, in contrast to *ich*, shares its preferred contexts of use with impersonally used *you*. Kitagawa and Lehrer (1990) and Malamud (2007) describe the contexts preferred by impersonally interpreted *you* as contexts in which the speaker expects the hearer to readily share his opinion, and to subscribe to his statement. These are contexts, I suggest, in which the validity of the opinion expressed by the speaker has not been questioned, and nothing points towards a possible objection. I call these contexts “positive contexts”. The context-utterance-pair in example (97) illustrates the impersonal reading of *du* in a positive context.

**Context:** During an interview, the coach of the German ice hockey national team talks about the frequent and regular occurrence of situations in which weaker teams beat stonger teams in professional sports. He argues that these situations will continue happening, and cannot be prevented. He says that in a match, being the stronger team never guarantees a victory, and continues with:

- (97) *Du musst als Mannschaft einfach mehr gewinnen wollen als der Gegner.*  
 you must as team simply more win want than the opponent  
 ‘As a team your wish to win simply has to be greater than your opponent’s.’<sup>59</sup>

The utterance in (97) elaborates on the statement that being the stronger team is not enough to win automatically, which is supported by ample evidence from all types of professional sports. Hence, the speaker sees it as an established fact about teams in general. The speaker treats his elaboration in (97) on the same level, i.e. as an

<sup>58</sup>Note that the impersonal use of *du* is possible in this context, but sounds less official. Cf. the effects of the speaker- and participant oriented effects in Section 1.4.3.

<sup>59</sup><http://www.netzathleten.de/Sportmagazin/Star-Interviews/Interview-mit-Eishockey-Bundestrainer-Uwe-Krupp-Besser-spielen-als-in-Bern/5761358233643659016/head>

established fact that neither the interviewer, nor anyone else is going to question. This assumption provides the positive context for the impersonal reading of *du*.

For impersonally used *du*, the preference for positive contexts is not as strong as the preference for negative contexts observable for impersonally used *ich*. Impersonally interpreted *du* is compatible with a use in negative contexts; the invitational effect can be used to appeal to the addressee to reconsider an opposing stance or opinion on the subject matter. This is illustrated in the following dialogue, in which impersonally interpreted *ich* and *du* are used contrastively to argue for two opposing points of view.

**Context:** Discussion about a news item: a 10-year-old Belgian girl is pregnant. The father is her 13-year-old friend. B thinks the parents did not observe their duty of supervision.

- (98) A: *Ich meine - du kannst dein Kind ja nicht auf Schritt und Tritt verfolgen.*  
 I mean you can your child PART not wherever-he/she-goes  
 follow  
 ‘I mean, one can’t always follow one’s child around.’
- B: *Klar, aber ich muss doch als Eltern merken, wenn mein Kind sich schon über solche Sachen Gedanken macht.*  
 sure but I must part as parents notice if my child  
 himself/herself already about such things thinks  
 ‘Sure, but as parents one has to notice, if one’s child already wondering about these things.’<sup>60</sup>

Sentence (98) uttered by A contains an impersonal use of *du*, which communicates that she expects B to agree with her statement that parents cannot follow their children around all the time. Given that B openly blames the parents, the context is not a positive context, as in example (97), but should be classified as a negative context. However, A tries to change B’s mind by appealing to B’s empathy with the girl’s parents. With her statement, A suggests that the pregnancy must have happened when the parents could not supervise their daughter, and therefore were not able to stop her. In her answer to A in (98), B concedes that, indeed, parents cannot follow their children around all the time (B uses *klar* - Engl. ‘*sure*’). But in her continuation she states that, in her eyes, parents already do not observe their duty of supervision if they do not pay enough overall attention to their children. That is, B suggests that parents who pay enough attention to their children notice if they start to be interested in sex. Hence, the negative context for impersonally used *ich* in B’s statement is A’s attempt to change B’s mind about the parents’ actions, which lead B to conclude that A might believe that not paying enough overall attention to one’s children cannot be seen as not observing one’s duty of supervision.

<sup>60</sup><http://de.answers.yahoo.com/question/index?qid=20070928054833AA12RG0>

Note that given the two negative contexts, the pronouns in (98) and (98) can also be interchanged.<sup>61</sup> When they are exchanged for each other, the “roles” of the speakers A and B are also swapped. That is, A is then perceived as distancing herself from B’s accusations, and B is perceived as trying to change A’s mind about the validity of her point of view, i.e. that the parents did not observe their duty of supervision.

So, in sum, the two impersonal uses differ with respect to their preferred contexts of use, as well as the strength of their preferences. The impersonal reading of *ich* strictly prefers negative contexts. The impersonal reading of *du* has a general preference for positive contexts, but is also compatible with negative contexts.

### 1.4.3 Participant-oriented pragmatic effects

The pragmatic effects of impersonally used *ich* and *du* and of the impersonal pronoun *man* can be divided into two distinct aspects: (i) a speaker-oriented aspect, shared by the three pronouns, and (ii) a general participant-oriented aspect, which is only observable—in different “flavors”—for *ich* and *du*.

Impersonally interpreted *ich*, *du*, and *man* have a common speaker-oriented core. Moltmann (2006) and Zifonun (2000) observe for English *one* and German *man*, respectively, that they can be used to express generalizations to which the speaker has a personal connection of some sort: either (i) the speaker has personal experience which supports the validity of the generalization in question, or from which he infers it, or (ii) the speaker presents an established generalization for which he is certain that it applies to him / would apply to him if he had the relevant properties.

The speaker-orientation contributed by English *one* and German *man* is best observed in comparison with indefinite noun phrases in ordinary generic sentences, see (99) and (100), which roughly translates example (99).

- (99) a. *One can see the picture from the entrance.*  
(Moltmann 2006:258)
- b. *People can see the picture from the entrance.*
- (100) a. *Man kann als Besucher das Bild vom Eingang aus sehen.*  
one can as visitor the picture from-the entrance PRT see
- b. *Besucher können das Bild vom Eingang aus sehen.*  
visitors can the picture from-the entrance PRT see

Moltmann (2006) argues that the connection to the speaker that is communicated by *one* provides the epistemic grounds underlying the speaker’s assertion (i.e. why the speaker believes that the generalization holds). That is, a speaker can utter *One can see the picture from the entrance* after he saw the picture from the entrance himself,

<sup>61</sup>I thank Thomas Weskott (p.c.) for pointing this out to me.

and generalized from his experience. In contrast, Moltmann argues that generalizing from a subjective experience is not enough to utter *People can see the picture from the entrance*, which requires “objective” evidence.

The same speaker-orientation is also observable for the impersonal uses of *ich* and *du*. Compare the sentences in (101) with (100-b).

- (101) a. *Ich kann als Besucher das Bild vom Eingang aus sehen.*  
 I can as visitor the picture from-the entrance PRT see  
 b. *Du kannst als Besucher das Bild vom Eingang aus sehen.*  
 you can as visitor the picture from-the entrance PRT see

Crucially, the examples in (100) and (101) only differ with respect to the additional pragmatic effects. On the truth-conditional level, the ordinary generic sentence in (100-b) expresses the same regularity with respect to visitors as (100-a) and the sentences in (101): ‘Visitors can see the picture from the entrance’.

Example (102) illustrates the effect of the speaker-oriented component. Since *man* automatically communicates that the speaker believes that he actually or presumably falls under the generalization that is expressed, denying it afterwards results in pragmatic oddness.<sup>62</sup>

- (102) *Man muss als Gentleman anderen die Tür aufhalten. #Ich, ein Gentleman, muss das aber nicht.*  
 one must as gentleman others the door hold-open I a gentleman, must that but not  
 ‘As a gentleman, one has to hold open the door for others. #But I, a gentleman, don’t have to.’

The effect persists if *man* is substituted by impersonally used *ich* and *du*. Presumably English *you* also patterns with *one* in this respect; as Kitagawa and Lehrer (1990) state, one of the functions of impersonally used *you* is to express assimilation on the part of the speaker to a wider generality.

Note that the judgements for all of the examples in this section that test for pragmatic oddness are subtle. To my mind, however, in all of these examples clear contrasts exist between the sentences containing impersonally interpreted pronouns and simple generic sentences formed with bare plurals.

For the impersonal uses of *ich* and *du*, additional pragmatic effects are observed, which involve the creation of either distance or closeness between the speaker and other people. These effects are independent of the shared speaker-orientation discussed above. Impersonal *man* has no comparable, additional effects.

Concerning the additional participant-related effects, second person (singular) *you* and *du* behave in the same way. The impersonal uses of both pronouns aim to cre-

<sup>62</sup>I thank Sebastian Bücking for discussing this effect with me.

ate closeness or an informal camaraderie between the speaker and the addressee (cf. Kitagawa and Lehrer (1990) and Malamud (2006, 2007) for English *you*). Malamud suggests that the impersonal use of *you* is an invitation for the addressee to put himself in the shoes of the individuals that the generalization is about, i.e. to empathize with these individuals. Kitagawa and Lehrer, in turn, propose that one of the rhetorical functions of the impersonal use is to induce “situational insertion” for the addressee.<sup>63</sup> They further argue that the pragmatic addressee-orientation of the impersonal use of *you* is connected to the observation that the speaker cannot explicitly exclude the addressee from a generalization that he stated with impersonal *you*.<sup>64</sup> This is illustrated in (103-b) for (103-a).

- (103) a. *But I have a gift for teaching . . . Plus, teaching fiction writing is a lot like writing. **You** have to examine manuscripts, use **your** mind, come up with possibilities, respond to characters in situations. In a lot of ways, it's like working on **your** own work.*  
(Kitagawa and Lehrer 1990:741)
- b. *\*?You have to examine manuscripts — I don't mean you personally — use your mind.*  
(Kitagawa and Lehrer 1990:743)

The same oddness is observable for German *du* if, as in (104), the applicability to the addressee is explicitly denied.

- (104) *Du musst als Erzieherin alle Kinder in der Gruppe gleich gut  
you must as childcare-specialist all children in the group equally well  
behandeln. #Das gilt für dich persönlich aber nicht.  
treat that applies for you personally but not  
'As a childcare specialist, you (imp.) have to treat every child in the group  
equally well. But that does not apply to you (the addressee) personally.'*

Hence, for both impersonally used *you* and *du* an explicit exclusion of the addressee clashes with the addressee-oriented presentation of the generalization.

A similar observation can be made for the presumed ready acceptance of the statement by the addressee, which cannot be explicitly negated either, see (105).<sup>65</sup>

<sup>63</sup>Rojas (2011) reports a similar behavior for impersonally used second person singular pronouns in Spanish as spoken in Chile. On the basis of a corpus study, she argues that the impersonal uses express a special form of evidentiality: (i) most of the time, the source of the information is a generalization made on the basis of the speaker's own experiences, and (ii) the generalization is expressed in a manner as to appeal to the addressee in an emotional fashion, and to convince them that they might find themselves in a similar situation.

<sup>64</sup>The impersonal reading of *you* can be made explicit by denying a referential use through adding the appositive *not YOU you* (upper case signals stress; p.c. E. Allyn Smith). Note that the denial of the referential use, though, is not the same as denying applicability to the addressee. It “only” mitigates a direct accusation which would result from the referential reading.

<sup>65</sup>The same note regarding the subtlety of the judgment applies for this example. In addition, it

- (105) *Als Erzieherin* *musst du gut mit Kindern umgehen können.*  
 as childcare-specialist must you good with children interact can  
*#Aber ich bin mir sicher, dass du das anders siehst, als ich.*  
 but I am me sure that you that differently views than I  
 ‘As a childcare specialist, you (imp.) have to interact well with children.  
 #But I am sure that you (add.) view matters differently from me.’

The participant-oriented effect of impersonally interpreted *ich* is in stark contrast to the effect of impersonally used *du*. It signals distance between the speaker and other people—but not necessarily other discourse participants. Impersonally used *ich* is most often used to criticize or complain about the actions or opinions of others, or to state “unpopular opinions” that the speaker aims to defend. In addition, the impersonal use of *ich* seems to be connected to heightened emotional involvement on the part of the speaker. That is, the speaker fully endorses the rule expressed by his statement.

In parallel to the participant-oriented effects of *du*, the speaker’s endorsement for the generalization cannot be explicitly denied. As illustrated in (106), such an attempt results in pragmatic oddness.

- (106) *Ich muss doch als Bauer meine Kühe melken. #Aber Bauern können*  
 I must PRT as farmer my cows milk but farmers can  
*meinetwegen machen, was sie wollen.*  
 for-all-I-care do what they want  
 ‘As a farmer, one has to milk one’s cows (and I support this fully). #But for all I care, farmers can do what they want.’

In addition, the speaker may signal various emotions with the use of *ich*, e.g. irritation, anger, or incredulity. These additionally conveyed emotions are contextually triggered, though, and not an integral part of the participant-related component of *ich*. Reconsider (107), repeated from above.

- (107) *Ich find das ist ein total doofes Argument! Ich kann doch als*  
 I think this is a totally stupid argument I can PRT as  
*Brautpaar nicht von meinen Gästen erwarten, dass sie mir*  
 bridal-couple not from my guests expect that they me  
*quasi die Feier finanzieren!*  
 more-or-less the party finance  
 ‘I think this is an absolutely stupid argument! The bridal couple can’t expect their guests to more or less pay for the party!’<sup>66</sup>

In the first sentence of (107), the speaker explicitly states her attitude towards the

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should be avoided to read the two sentences with a deliberate pause in between since (105) improves if the speaker “has time” to change his mind about what he expects regarding the addressee and his opinions.

<sup>66</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

topic under discussion. The generalization in the second sentence is then uttered with the same emotional coloring.

So in sum, impersonally interpreted *ich* and *du* and impersonal *man* induce additional pragmatic speaker-oriented effects that can be characterized as the speaker's belief that the generalization applies to him, or would apply to him if he had the relevant properties. The additional effects that are associated only with the impersonal uses of *ich* and *du* concern how the generalizations that are expressed are presented to the addressee and other discourse participants. Impersonally interpreted *ich* is used to signal full endorsement by the speaker, but induces a distancing effect with respect to other individuals that do not share the speaker's opinion. Impersonally interpreted *du*, in contrast, mainly aims to build closeness between the speaker and the addressee.

One final observation in connection with the participant-oriented effects of impersonally interpreted personal pronouns is presented in Malamud (2006, 2007). As a consequence of the empathy invitation issued by the speaker, she observes what she calls "empathy tracking effects": Whenever the impersonal reading of *you* co-occurs with another impersonally interpreted pronoun—in the case of English, the impersonal pronoun *one*—the addressee's empathy is directed towards those individuals that *you* represents in the clause. Consider the following examples.

- (108) a. **One** could have thrown **you** in jail for that. (empathy with object)  
 b. **You** could have thrown **one** in jail for that. (empathy with subject)  
 (Malamud 2007:11)

In the first example, impersonally interpreted *you* is in object position, and the addressee is invited to empathize with the people potentially thrown into jail. This contrasts with the impersonal use of *you* in subject position in the second example. There, the addressee's empathy is directed towards the people who potentially throw others into jail.

Analogous examples can be given in German for the impersonal use of *du* in contrast with the impersonal pronoun *man*. The following examples are close translations of the English examples above.<sup>67,68</sup>

<sup>67</sup>German *man* only has a nominative form. For all other cases the indefinite pronoun *einer* has to be used. Cf. Chapter 2 for a discussion of impersonal pronouns in German and English.

<sup>68</sup>Malamud (2007) discusses the following examples to illustrate the empathy tracking effect for German *du*. I adapted the examples to show the empathy tracking parallel to the English example also because (i-b) contains subjunctive marking on the verb, which blocks the impersonal interpretation (cf. Section 1.3). So, to my mind, (i-b) does not have the interpretation intended by Malamud.

- (i) a. *Damals wäre man für so etwas ins Gefängnis geworfen worden.*  
 Then was MAN for thus something in jail thrown was.  
 'In those days, one would be thrown in jail for this kind of thing.'  
 (empathy could go either way)  
 b. *Damals wärest du für so etwas ins Gefängnis geworfen worden.*  
 Then was you for thus something in jail thrown was.

- (109) a. *Man hat dich dafür ins Gefängnis werfen können.*  
 one has you for-this in-the jail throw could  
 ‘One could have thrown you in jail for that.’ (empathy with object)
- b. *Du hast einen dafür ins Gefängnis werfen können.*  
 you have one for-this in-the jail throw could  
 ‘You could have thrown one in jail for that.’ (empathy with subject)

A similar empathy tracking effect can be observed for the impersonal reading of *ich*, as well. In the following example, the impersonal reading of *ich* is contrasted with the German impersonal pronoun *man*.

- (110) *Aaaaaber mal ehrlich, wenn ich als Arbeitgeber eine Stellenanzeige aufgabe,*  
 but-wait honestly, if I as employer a job-ad place  
*dann checke ich doch wenn das Ding online ist, ob auch alles*  
 then check I part when the thing online is whether part everything  
*stimmt. Jedenfalls, wenn ich ein Arbeitgeber bin, bei dem man arbeiten*  
 is-right in-any-case if I an employer am for whom one work  
*will.*  
 wants  
 ‘But wait, honestly, if an employer places a job ad, then he has to double-check online whether the ad is fine. At least, if it’s an employer one wants to work for.’<sup>69</sup>

In both sentences of example (110), the speaker uses *ich* impersonally for employers in general. In the second sentence of (110), he additionally uses the impersonal pronoun *man* to talk about employees in general. This difference in pronominal form regarding employers and employees creates a different distribution of the speaker’s empathy. The set of individuals the speaker focusses on is the set of employers; the entire text is a complaint about negligent employers. Hence, the speaker’s heightened emotional involvement concerns the rules of conduct for employers rather than for employees.

Since in German three impersonally used pronominal forms are available, there is a third combination which could in principle occur, and produce empathy tracking effects: *ich* and *du*. Given their restrictions and respective participant-oriented effects, it seems unlikely to me that this combination should arise: Since *ich* is restricted to subject(-like) positions (cf. Section 1.3), any well-formed utterance of this kind should have *ich* in subject position and *du* in object position. Furthermore such an utterance would have to express a statement that the speaker completely endorses for those individuals that *ich* is used for, but for which he believes that someone does not share his opinion. At the same time, the speaker would invite the addressee to empathize

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‘In those days, you would be thrown in jail for this kind of thing.’  
 (empathise with the victim)  
 (Malamud 2007:12)

<sup>69</sup><http://www.mediengestalter.info/forum/47/mein-spruch-des-tages-39931-1124.html>

with those individuals *du* is used for, and would express that he expects the addressee to readily accept the general statement regarding these individuals. I have to admit that even though the existence of such a configuration cannot be excluded on the grounds that the pragmatic effects of *ich* and *du* are simply incompatible, I cannot think of a plausible example in which *ich* and *du* are clearly used impersonally. Hence at this point, I am forced to leave this as an open issue for further research.

## 1.5 The semantics of personal pronouns

### 1.5.1 Introductory remarks

In Section 1.2, it was shown that in their impersonal uses, German first and second person singular *ich* and *du* differ in their semantic behavior fundamentally from when they are used referentially. Specifically, the impersonal and referential uses differ from each other in three respects: in their impersonal readings, but not in their referential readings . . .

- *ich* and *du* do not shift in indirect discourse.
- *ich* and *du* can be used interchangeably, and pronominal forms may be mixed.
- *ich* and *du* show quantificational variability effects.

Having worked out these differences, it is instructive to consider how the semantic contribution of the referential uses are standardly analyzed, and to see which aspects of these analyses capture the noted behavior of the referential uses. Hence, this section's aim is to provide the necessary background on the grammatical properties of referentially used singular personal pronouns, and to introduce the classical and recent influential analyses of their semantic contribution (Kaplan 1978 [1989], Heim and Kratzer 1998, and Kratzer 2009). The final point I address is that the popular proposals that are currently available to account for the referential uses of *ich* and *du* cannot be adopted straightforwardly to capture the semantic behavior of their impersonal uses, as suggested by their different semantic behavior.

### 1.5.2 1st/2nd vs. 3rd – syntactic and semantic properties

In traditional normative and descriptive grammars, pronouns in general and personal pronouns in particular are characterized as proforms which “stand in” for full nominal expressions, i.e. full or bare noun phrases.<sup>70</sup>

The morphological paradigm of personal pronouns is traditionally structured with respect to the conceptually motivated grammatical categories of person, number, and

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<sup>70</sup>Traditional grammars usually also distinguish personal pronouns from reflexive pronouns and possessive pronouns. I group these two classes with the class of personal pronouns.

gender. For German and English, the category of person is divided into first, second, and third person. First and second person encode the two participant roles—speaker and addressee—in contrast to non-participants, which are encoded by third person. The category of number is divided into singular and plural, which encode single and multiple referents across the category of person. The third category, gender, is only distinguished in the third person singular, and is divided into the three subcategories masculine, feminine, and neuter. Table 1.1 illustrates the pronominal paradigms of German and English personal pronouns in nominative case.<sup>71</sup>

	singular	plural		singular	plural
first	<i>I</i>	<i>we</i>	first	<i>ich</i>	<i>wir</i>
second	<i>you</i>		second	<i>du</i>	<i>ihr</i>
third	<i>he, she, it</i>	<i>they</i>	third	<i>er, sie, es</i>	<i>sie</i>

Table 1.1: The systems of English and German personal pronouns in nominative case

Since the central topic of this thesis is the impersonal use of first and second person singular pronouns, I restrict the following general overview to singular personal pronouns only. A discussion of the additional syntactic and semantic idiosyncrasies of plural personal pronouns is beyond the scope of this thesis, but see e.g. Sauerland (2008) and Rullmann (2010) for details.

The traditional way of presenting the paradigm of personal pronouns—indeed the formation of a class of personal pronouns as such—already suggests that pronouns of all persons and numbers are a uniform lexical class. Benveniste (1971[1958]) is one of the first to criticize this view on personal pronouns. He argues that first and second person pronouns need to be distinguished from third person pronouns based on two fundamental semantic differences. First, the reference of first and second person pronouns is strictly dependent on the utterance context. The reference of third person pronouns, on the other hand, is not fixed automatically from the utterance context, see (111).

- (111) a. A to B: *I like sushi.*  $\rightsquigarrow$  A likes sushi.  
 b. A to B: *You like sushi.*  $\rightsquigarrow$  B likes sushi.  
 c. A to B: *He/she likes sushi.*  
 $\rightsquigarrow$  X (whoever A intends to refer to) likes sushi.

In other words, the speaker can more or less freely choose the intended referent for third person singular pronouns from the context (as long as it can be made clear who he refers to). The speaker- and addressee-reference found with first and second person

<sup>71</sup>English personal pronouns are the only elements in the language which still distinguish between nominative and accusative case. In German, the full case paradigms observable for nouns also exist for pronouns.

pronouns, on the other hand, depends entirely on the circumstances of utterance, and cannot be influenced by the speaker's intentions.

The second semantic difference is that only third person pronouns are “true proforms” which can stand in and pick up the referent of any preceding (or following) nominal expression. First and second person pronouns cannot be used in this way. Compare examples (112) and (113).<sup>72</sup>

- (112) a. *Peter<sub>1</sub> likes his<sub>1</sub> mother.*  
 b. \**Peter<sub>1</sub> likes my<sub>1</sub>/your<sub>1</sub> mother.*
- (113) a. *Peter<sub>1</sub> likes sushi. He<sub>1</sub> also likes sake.*  
 b. \**Peter<sub>1</sub> likes sushi. I<sub>1</sub>/you<sub>1</sub> also like sake.*

Further differences arise when the behavior of first, second, and third person singular pronouns with respect to syntactic and semantic binding is considered—one of the central topics in the modern syntactic and semantic literature.<sup>73</sup> There, four uses of personal pronouns are generally distinguished (cf. Evans 1977, 1980; Elbourne 2008): the referential use, the co-referential use, the bound use, and the so-called E-type use.<sup>74</sup>

In the referential use, a personal pronoun is used to make reference to an entity that is present or somehow salient in the context of utterance. The intended referent can be, but does not have to be made explicit with a pointing gesture (“ostension”), consider (114) in the given context.

- (114) Said of a man passing in the street: *He's up early.*  
 (Evans 1980:337)

A co-referentially used personal pronoun shares its reference with a referential expression or pronoun occurring in the same sentence or previous discourse, which is called its *antecedent*. For instance, in (115) the noun phrase *Peter* is the antecedent for both occurrences of the pronoun *he* in (115-b) and (115-c), and in (116) *John* is the antecedent of the possessive *his*.

<sup>72</sup>I use indices such as natural numbers or the letters *i, j, k* to indicate shared reference, and later on to indiscriminately mark co-reference, binding, as well as E-type configurations. In case a referential expression carries the same index as a personal pronoun, the two expressions are intended to co-refer. Whenever a quantifying expression and a personal pronoun carry the same index, the quantifying expression is assumed to bind or stand in an E-type configuration to the pronoun.

<sup>73</sup>This section only provides a brief overview of the semantic proposals for singular personal pronouns. I do not discuss the literature on Binding Theory and the characteristics of personal pronouns connected to the syntax-semantics interface. For an overview see Büring (2005, 2011) and Elbourne (2008).

<sup>74</sup>Traditional grammar distinguishes two uses of personal pronouns: a deictic and an anaphoric use. The deictic use corresponds to the referential use in the four-way distinction, and the anaphoric use covers the three other uses.

- (115) a. A: *Peter<sub>1</sub> is nice.*  
 b. B: *Yes, he<sub>1</sub> likes sushi.*  
 c. A: *And he<sub>1</sub> likes sake.*

(116) *John<sub>1</sub> loves his<sub>1</sub> mother.*<sup>75</sup> (Evans 1980:337)

In the bound use, the pronominal referent obligatorily depends on the reference of another linguistic expression, or covaries with a quantifying expression. Reflexive pronouns, for example, only have a bound use, see (117) and (118).

- (117) a. *Few congressmen<sub>1</sub> admire only the people they<sub>1</sub> know.*  
 (Evans 1980:339)  
 b. *Few congressmen<sub>1</sub> admire only themselves<sub>1</sub>.*

- (118) a. *He<sub>1</sub>/the man<sub>1</sub> likes himself<sub>1</sub>.*  
 b. *She<sub>1</sub>/the woman<sub>1</sub> likes herself<sub>1</sub>.*  
 c. *It<sub>1</sub>/the dog<sub>1</sub> likes itself<sub>1</sub>.*

A prerequisite for the bound use to arise is that the binding expression precedes the bound pronoun, and stands in a c-command relation<sup>76</sup> to it.

As for the bound use, the E-type use of a pronoun involves covariation of the pronoun's referent with a quantifying expression, as well.<sup>77</sup> The special characteristic of the E-type use, however, is that the seemingly bound use of the pronoun arises even though the quantifying expression and the pronoun do not stand in the required

<sup>75</sup>Note that there is evidence from so called strict and sloppy readings of verb phrase ellipsis that the possessive pronoun in this example is ambiguous between a co-referential and a bound use. As Williams (1977) and others show, ellipsis requires parallelism at the level of Logical Form between the elided verb phrase and its antecedent verb phrase. Therefore, if the elided material is ambiguous the parallelism requirement demands that the antecedent verb phrase be ambiguous, as well. For instance, in *John<sub>1</sub> loves his<sub>1</sub> mother, and Peter<sub>2</sub> does too*, the elided verb phrase may have two interpretations. The possessive in the elided verb phrase, *loves his mother*, can be interpreted either as referring to John, or as referring to Peter. In the first case, the possessive co-refers with the subject of the first clause. Therefore, also the possessive in the first clause needs to have a co-referential reading. In the second case, the possessive is bound by the subject of the second clause, i.e. *Peter*. Hence, the possessive in the first clause also has to be bound by its antecedent.

<sup>76</sup>C-command is a structural relation between two nodes in a tree structure.

- (i) In a tree structure, a node  $\alpha$  c-commands a node  $\beta$  iff neither node dominates the other and the node immediately dominating  $\alpha$  dominates  $\beta$ .

<sup>77</sup>Originally, E-type uses were called “donkey pronouns”. This term was coined by Geach (1962) who discusses sentences like (i-a). His example is usually considered together with the conditional version in (i-b).

- (i) a. *Every farmer who owns a donkey beats it.*  
 b. *If a farmer owns a donkey, he beats it.*

Kamp (1981) and Heim (1988 [1982]) treat donkey pronouns as bound by a quantifier scoping at sentence level. Later on, donkey pronouns were re-analyzed, and renamed “E-type uses” of these pronouns (cf. Heim 1990).

syntactic configuration. That is, the quantifying expression does not c-command the pronoun. Consider the examples in (119).

- (119) a. *Every congressman who admires a politician<sub>1</sub> votes for him<sub>1</sub>.*  
 b. *If a congressman<sub>2</sub> admires a politician<sub>1</sub>, he<sub>2</sub> votes for him<sub>1</sub>.*  
 c. *Few congressmen<sub>1</sub> admire Kennedy, and they<sub>1</sub> are very junior.*  
 (Evans 1980:339)

As (119-c) shows, E-type pronouns also do not get the same interpretation as true bound variables. Their reference depends on the set of individuals quantified over, but not on the quantificational force of the quantifying expression. If *they* in (119-c) were logically bound by the quantifying expressions *few congressmen*, the pronoun would be expected to be in the scope of the quantifier. If this were the case, the sentence would be expected to have the following interpretation: ‘Few congressmen are such that they admire Kennedy and are very junior’. This interpretation is not available for the example above. Consequently, the semantic relation between the pronoun and the quantifying expression in the E-type use is not the same as in the true bound use of personal pronouns.

When the syntactic and semantic behavior of first and second person pronouns is considered with respect to the last three uses, it is immediately clear that Benveniste’s distinction between first and second person pronouns, on the one hand, and third person pronouns, on the other hand, is reflected here, as well.<sup>78</sup>

Since first and second person pronouns cannot pick up the reference of referring expressions, it is unclear whether they have a co-referential use in the same sense as third person pronouns. Furthermore with respect to previous occurrences of first and second person pronouns, putative co-referentially used pronouns cannot be distinguished from further referential uses of these pronouns, see (120).

- (120) a. *A: I like my mother.*  
 b. *A: I like sushi, and I also like sake.*

The reference of *I* and *my* in (120-a) may be determined independently of the presence of an antecedent, since *I* and *my* always refer to the speaker of the utterance. The same is true for the two occurrences of *I* in (120-b). Therefore, no evidence for a genuine co-referential use is available. The referential use and the co-referential use basically coincide.

First and second person singular reflexives can only be bound by first and second person pronouns, respectively, see (121).

<sup>78</sup>Crosslinguistically, first and second person pronouns are also distinguished from third person pronouns by various morphosyntactic phenomena. Cf. Gruber (2011:336) for a non-exhaustive list.

- (121) a.  $I_1$ /*\*you*<sub>1</sub>/*\*he*<sub>1</sub>/*\*the man*<sub>1</sub> like(s) *myself*<sub>1</sub>.  
 b. *\*I*<sub>1</sub>/*you*<sub>1</sub>/*\*he*<sub>1</sub>/*\*the man*<sub>1</sub> like(s) *yourself*<sub>1</sub>.

Also quantifying noun phrases are unable to bind first and second person singular pronouns, see (122).

- (122) a. *\*Every man*<sub>1</sub> likes *my*<sub>1</sub>/*your*<sub>1</sub> mother.  
 b. *\*Every man*<sub>1</sub> likes *myself*<sub>1</sub>/*yourself*<sub>1</sub>.

It seems that, in general, non-reflexive first and second person pronouns cannot be bound. However in some rare cases exemplified below, bound readings of these pronouns do in fact occur (cf. Rullmann 2004; Heim 2005; Kratzer 2009).

- (123) a. *I'm the only one around here who can take care of my children.*  
 (Kratzer 2009:188)  
 b. *Only you eat what you cook.*  
 (Kratzer 2009:188)

The preferred interpretation of the first sentence is that the speaker is the only person who can take care of his or her children, and that all others are incapable of taking care of their own children. Similarly, the second sentence is usually understood as saying that the addressee is the only person who eats what he or she cooks, and that no one else eats what they, themselves, cook. For these interpretations to be available, *my* and *you* need to be bound by *only*.

The sentences in (123) also have dispreferred interpretations, which arise when the possessive forms are interpreted as strictly referential. For the first sentence, the dispreferred reading is that the speaker is the only person who can take care of his or her children, and that all others are incapable of taking care of the speaker's children, and for the second example, that the addressee is the only person who eats what he or she cooks, and that no one else eats what the addressee cooks.

First and second person pronouns in their bound use are called “fake indexicals” in the literature. This reflects the fact that regardless of their being morphologically marked as first and second person pronouns, they behave exactly like bound third person pronouns.

An analogous E-type use is unavailable for first and second person singular pronouns, see (124).

- (124) a. *\*If a speaker*<sub>1</sub> says a sentence,  $I_1$  usually mean it.  
 b. *\*Every speaker who offends an addressee*<sub>1</sub> will apologize to *you*<sub>1</sub> later.

The ungrammaticality of (124) is, of course, connected to Benveniste's observation that

*I* and *you* cannot be anaphoric to other referential expressions even if these expressions may denote the same individuals.

This discussion results in the following picture.

	referential	co-referential	bound	E-type
1st		yes	yes (restricted)	no
2nd		yes	yes (restricted)	no
3rd	yes	yes	yes	yes

Table 1.2: Availability of the four uses of personal pronouns

So in sum, even though personal pronouns are traditionally seen as a uniform lexical class, their syntactic/semantic behavior is not uniform. Specifically, the above discussion suggests that first and second person singular pronouns, on the one hand, and third person singular pronouns, on the other hand, should be analyzed as distinct classes.

### 1.5.3 “Standard” accounts of pronominal semantics

One formal analysis of personal pronouns which captures the referential, the co-referential, and the bound use, is proposed in Heim and Kratzer (1998). They introduce a specific interpretational rule for pronouns, which introduces an individual variable as the denotation of a pronominal expression, see (125).<sup>79</sup>

(125) *Pronouns and traces rule:*

If  $\alpha$  is a pronoun or trace,  $i$  is an index, and  $g$  is a variable assignment whose domain includes  $i$ , then  $\llbracket \alpha_i \rrbracket^g = g(i)$

(Heim and Kratzer 1998:241)

This account is based on the traditional analysis of third person singular pronouns as individual variables, which can already be found in Montague (1973) and Kamp and Reyle (1993).

The variable contributed by a pronoun or trace is assigned its value by a variable assignment  $g : \mathbb{N} \rightarrow D_e$ , i.e. a function from natural numbers (i.e. indices) to individuals. That is, the variable assignment models the determination of the pronominal referent from discourse referents that were previously (contextually or linguistically) introduced.

In the referential and co-referential use, the pronominal referent depends on the linguistic and extra-linguistic context. Formally, it is assumed that if a variable assignment reflects an appropriate context for a sentence containing referential pronouns,

<sup>79</sup>Heim and Kratzer analyze traces as obligatorily bound variables. Consequently, pronouns and traces are covered by the same interpretational rule. Cf. Heim and Kratzer (1998:241).

it contains the right index-individual pairs to assign the intended individuals to the variables contributed by the pronouns.

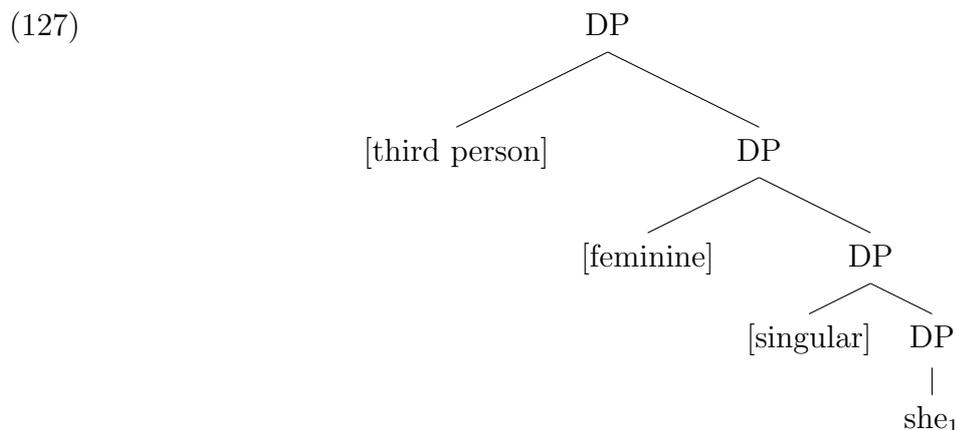
In the bound uses, on the other hand, the referent of the pronoun covaries with the individuals that the binding expression ranges over. To capture this behavior formally, the variable assignment is manipulated by the particular rule of interpretation in (126) to yield a co-varying interpretation.

(126) *Predicate abstraction:*

If  $\alpha$  is a branching node with daughters  $\beta$  and  $\gamma$ , where  $\beta$  dominates only a numerical index  $i$ . Then, for any variable assignment  $g$ ,  $\llbracket \alpha \rrbracket^g = \lambda x \in D. \llbracket \gamma \rrbracket^{g^{x/i}}$

(Heim and Kratzer 1998:186)

Person, gender, and number information for third person singular pronouns is contributed by morphosyntactic features, which are interpreted as partial identity functions that place presuppositions on the referent determined via the variable assignment. For example, third person singular feminine *she* is built up from the following structure.



(Heim and Kratzer 1998:244)

The presupposition introduced by the gender feature [feminine] filters out all non-female individuals.<sup>80</sup>

(128)  $\llbracket \text{[feminine]} \rrbracket^g = \lambda x : x \text{ is female. } x$

(Heim and Kratzer 1998:244)

<sup>80</sup>Presuppositions are expressed in Heim and Kratzer (1998) as domain restrictions on the  $\lambda$ -expression. The general form of a  $\lambda$ -term is as in (i).

(i)  $\lambda x : \phi. \psi$

$\phi$  denotes a condition on the domain of  $x$ , while  $\psi$  denotes the value that the function assigns to  $x$ . A mathematical example is  $\lambda x : x \in \mathbb{N}. x + 1$ , which denotes a function that is only defined for natural numbers ( $x \in \mathbb{N}$ ), and that returns the successor of that number.

When this analysis is applied to German and English third person singular pronouns, they come out as follows.

- (129) a.  $\llbracket er_1/he_1 \rrbracket^g = g(1)$ , defined if  $g(1)$  is a single male individual  
 b.  $\llbracket sie_1/she_1 \rrbracket^g = g(1)$ , defined if  $g(1)$  is a single female individual  
 c.  $\llbracket es_1/it_1 \rrbracket^g = g(1)$ , defined if  $g(1)$  is a single thing

Since this account can handle the (co-)referential and bound readings of third person singular pronouns, one could try to extend it to first and second person singular pronouns. Such an analysis should also be able to capture the “fake indexical” cases.

To implement this idea, one has to introduce first and second person features that restrict the admissible values of the variable to the speaker or the addressee in  $c$ , respectively, similar to the gender feature in (128), see (130).

- (130) a.  $\llbracket [1st] \rrbracket^{g,c} = \lambda x : x$  is the speaker in  $c$ .  $x$   
 b.  $\llbracket [2nd] \rrbracket^{g,c} = \lambda x : x$  is the addressee in  $c$ .  $x$

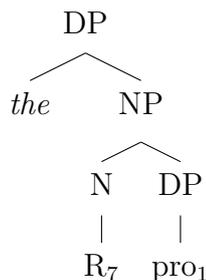
Given this additional assumption, the first and second person singular pronouns in German and English come out as follows.

- (131) a.  $\llbracket ich_1/I_1 \rrbracket^{g,c} = g(1)$ , defined if  $g(1)$  is a single individual and the speaker in  $c$   
 b.  $\llbracket du_1/you_1 \rrbracket^{g,c} = g(1)$ , defined if  $g(1)$  is a single individual and the addressee in  $c$

Kratzer (2009) shows that the extension of the formalization in Heim and Kratzer (1998) to first and second person pronouns fails to capture the “fake indexical” cases for first and second person singular pronouns. Since the potential values for the variables are restricted to the speaker or addressee, i.e. a specific individual in the context, the account cannot capture covariation. All non-speaker or non-addressee individuals would be filtered out by the presupposition of the first and second person feature, respectively.

The idea to interpret personal pronouns as individual variables also leads to problems for the E-type uses of third person singular pronouns. Following Cooper (1979) and Heim (1990), Heim and Kratzer (1998) therefore propose to interpret E-type uses as covert definite descriptions of the following form.

(132)



(Heim and Kratzer 1998:292)

The seemingly bound reading of the E-type uses arises because the pronouns are interpreted as (covert) definite descriptions that refer to and vary with the various individuals that are quantified over. For each specific case, the relevant definite description that is understood as the denotation of the pronoun depends on the quantifying expression (i.e. the binder), the pronoun’s containing clause, and the discourse context. Formally, this is captured by analyzing the descriptive part of the pronoun as a free predicate variable,  $R_7$ , for which the variable assignment  $g$  contextually assigns a fitting value.

In more recent analyses of the semantic contribution of third person singular pronouns, their behavior in the E-type use, as well as their classification as definite expressions is taken as evidence and motivation to analyze them as definite descriptions in all of their uses (cf. Elbourne 2005, 2008; Kratzer 2009). In the most elaborated implementations of this idea, third person pronouns *are* definite descriptions with silent descriptive content.

For first and second person singular pronouns, there is strong evidence against analyzing them as definite descriptions with silent descriptive content (cf. Benveniste 1971[1958]; Kaplan 1978 [1989]; Nunberg 1993). Even though the referent of first or second person singular pronouns can be referred to by definite descriptions of various forms, e.g. ‘the speaker (of this utterance)’, ‘the addressee (of this utterance)’, the pronouns’ semantic contribution to the truth-conditions of the sentence is fundamentally different from the semantic contribution of definite descriptions. Hence, first and second person singular pronouns cannot be freely interchanged with co-referring definite descriptions; such a substitution will always result in a change in truth-conditions. Compare (133-a) and (133-b).

- (133) a. *Oh, it’s you!*  
 b. *?Oh, it’s the addressee of this utterance!*  
 (Nunberg 1993:1)

Depending on different possible contexts for (133-a), substituting *you* with other, more contentful descriptions may be possible, e.g. *the guy I saw on the bus*. However definite descriptions of this kind are inadequate to serve as or to represent the meaning of *you* in general.

A description which might be more adequate to serve as the contribution of *you*, *the person I intend to talk to*, however, does not capture those cases, where the speaker never planned, or intended to address the other person. Consider example (133-a), in which the speaker surprised about the addressees sudden presence.

Following Kaplan (1978 [1989]), Nunberg (1993) notes that first and second person singular pronouns directly contribute their referents to the truth-conditions of a sentence. In this they contrast with definite descriptions, which first contribute the description by which the referent is determined in a second step. Thus, the speaker of (133-a) may be surprised about the presence of a person, and address the person with *you*. In (133-b), though, the speaker's surprise depends on the descriptive content of *the addressee (of this utterance)*.

The same strict context dependence holds for first person singular pronouns, as well. If *I* were substitutable with a definite description of the form *the speaker (of this utterance)*, the sentence in (134) should come out as true.

- (134) *If no one were to utter this sentence, I would not exist.*  
(Kaplan 1978 [1989]:520)

Kaplan (1978 [1989]) proposes a formal account which captures both the strict utterance dependence of first and second person singular pronouns and the direct contribution of the pronouns' referents without postulating mediation by descriptive content. He introduces two levels of meaning, the "character" and the "content" of a linguistic expression. The character of an expression is a function from contexts to the content of the expression. The content of an expression, in turn, is a function from circumstances of evaluation (e.g. a world or situation of evaluation) to an extension, i.e. the intension of the expression.

A Kaplanian context is a "possible occasion of use" which has a speaker, a time, a location, a world, and sometimes an addressee. To model Kaplanian contexts, a parameter  $c$  is usually introduced which tracks the speaker, the addressee, the time, the location, and the world of a given utterance. Thus, formally a context can be seen as a quintuple:  $c = \langle c_S, c_A, c_T, c_L, c_W \rangle$ .

First and second person singular pronouns, Kaplan argues, are "directly referential expressions", i.e. their referents are fully determined by their characters from the utterance context, see (135). In addition, they are pure indexicals since they require no demonstration of the intended referent.

- (135) a.  $\llbracket \textit{ich/I} \rrbracket^c = c_S$   
b.  $\llbracket \textit{du/you} \rrbracket^c = c_A$

Kaplan also classifies third person singular pronouns in their referential use as directly referential expressions, but not as pure indexicals since they require an ostension (cf.

the discussion of the referential use of third person pronouns in Section 1.5.2). He ignores all other possible uses of third person singular pronouns, which he assumes result from different, possibly homonymous lexical items. As is evident from the system proposed in Heim and Kratzer (1998) and the brief introduction of Elbourne’s (2005; 2008) aim to analyze pronouns as definite descriptions, the homonymy assumption for the different uses of third person pronouns is generally not shared in the linguistic literature. Usually, a unified analysis that captures all uses is aimed for.

#### 1.5.4 Kratzer (2009)

A recent account in which the main goal is *not* to find a unified account for *all* uses of *all* (singular) personal pronouns is put forth in Kratzer (2009). Kratzer proposes that bound uses of first, second, and third person pronouns need to be modelled separately from their referential, co-referential, and E-type uses, and that also first and second person pronouns differ in their semantic contribution from third person pronouns. The first split between the bound use vs. the other uses is based on Rullmann’s (2004) observation that in some cases binding is possible even though the morphological make-up of the binder only partially coincides with the make-up of the bound pronoun, see (136).

- (136) *Only you prepared a handout for our first appointment.*  
(Kratzer 2009:190)

This data, Rullmann argues, suggests that the semantic contribution of a pronoun is built up from morphosyntactically manipulable parts. Kratzer agrees with Rullmann’s analysis, and furthermore argues that the “fake indexical” data in general points in the same direction.

Building on recent typological and syntactic research on the denotation of morphosyntactic features, i.e.  $\phi$ -features (cf. Harley and Ritter 2002, Harbour 2006), Kratzer proposes that syntactically, personal pronouns only exist as hierarchically structured sets of features, which can be manipulated in the syntax. The specific pronominal forms are inserted at a later point in the derivation via vocabulary insertion rules. They only spell out specific  $\phi$ -feature combinations.<sup>81</sup> For English singular personal pronouns Kratzer proposes the vocabulary insertion rules in (137).

- (137) [1st] [singular]  $\rightarrow I$   
[2nd]  $\rightarrow you$   
[female] [singular]  $\rightarrow she$

---

<sup>81</sup>Kratzer assumes a constraint on vocabulary insertion rules for pronouns: only  $\phi$ -features are targeted. This prevents combinatorial features, like [def], [group], and [sum] from featuring in these rules. The constraint is motivated by an observation in Cysouw (2003), who notes that some combinations of features are never explicitly spelled out in any language even though they are conceptually sound.

[male] [singular] → *he*

[thing] [singular] → *it*

The vocabulary insertion rules for German differ from the ones for English only in the  $\phi$ -feature specification for the second person since German morphologically distinguishes second person singular and plural.<sup>82</sup>

(138) [1st] [singular] → *ich*

[2nd] [singular] → *du*

[female] [singular] → *sie*

[male] [singular] → *er*

[thing] [singular] → *es*

At the level of Logical Form, the structured sets of features are interpreted compositionally. In all of their uses, all personal pronouns are individual-denoting nominal expressions. The specific denotations differ for first and second vs. third person pronouns, on the one hand, and (co-)referential and E-type uses vs. bound uses, on the other hand.

The referential uses of first and second person singular pronouns are built up from number-neutral, directly referring first and second person features, [1st] and [2nd], and a singular feature, [singular].<sup>83</sup>

(139) a.  $[[[1st]_N]]^{g,c} = \text{the speaker}(s) \text{ of } c$

b.  $[[[2nd]_N]]^{g,c} = \text{the addressee}(s) \text{ of } c$

The singular number feature contributes a presupposition which filters out all plural individuals.<sup>84</sup>

(140)  $[[[singular]]]^{g,c} = \lambda x : x \text{ is an atom. } x$

---

<sup>82</sup>Kratzer's proposal does not take into account that in contrast to English, the form of German personal pronouns may depend on the grammatical gender of an expression or the natural gender of its denotation. In (i), the third person singular female pronoun *sie* and the third person singular neuter *es* may both be used to co-refer with *das Mädchen* (Engl. 'the girl'; grammatical gender: neuter, natural gender: female). Cf. Sauerland (2007) for details.

(i) *Das Mädchen<sub>1</sub> hat jetzt kurze Haare. Sie<sub>1</sub>/es<sub>1</sub> war beim Friseur.*  
 the girl has now short hair she/it was at-the hairdresser  
 'The girl now has short hair. She had her hair done.'

<sup>83</sup>Note that (139) should not be read as [1st] or [2nd] being interpreted as definite descriptions. The expressions *the speaker(s) of c* and *the addressee(s) of c* have the same status as Kaplan's  $c_S$  and  $c_A$ .

<sup>84</sup>Plural is left unmarked. To form the associative plural needed for the first and second person plural pronouns, Kratzer introduces a combinatorial [group] feature, which takes a participant feature and returns the group associated with the given participant. She also introduces a combinatorial [sum] feature and a  $\phi$ -feature [dual] to deal with other pluralities pronouns can refer to. For details on dual or plural forms see Kratzer (2009).

Hence, the semantic contributions of the feature combinations for first and second person singular pronouns come out as in (141).

- (141) a.  $[[ich/I]^{c,g}] = [[\text{singular}]]^{g,c}([[1\text{st}]_N]^{g,c}) =$   
the speaker(s) of  $c$ , defined if the speaker(s) of  $c$  is an atom  
b.  $[[du]^{c,g}] = [[\text{singular}]]^{g,c}([[2\text{nd}]_N]^{g,c}) =$   
the addressee(s) of  $c$ , defined if the addressee(s) of  $c$  is an atom  
c.  $[[you]^{c,g}] = [[2\text{nd}]_N]^{g,c} =$  the addressee(s) of  $c$

In contrast, third person singular pronouns in their (co-)referential and E-type uses are definite descriptions built from descriptive (i.e. non-presuppositional), predicate denoting gender features, the [singular] feature, and a definiteness feature.

- (142) a.  $[[\text{male}]_N]^{g,c} = \lambda x. x$  is one or more males  
b.  $[[\text{female}]_N]^{g,c} = \lambda x. x$  is one or more females  
c.  $[[\text{thing}]_N]^{g,c} = \lambda x. x$  is one or more things

The definiteness feature is not part of the set of  $\phi$ -features. It is part of a set of combinatorial features which link  $\phi$ -features, or modify them to allow for a compositional interpretation of feature sets. For example, the gender features and the [singular]-feature cannot be combined, as such, because of their conflicting types: gender features are of type  $\langle e, t \rangle$  while the [singular]-feature has type  $\langle e, e \rangle$ . The definiteness feature can link these two features since it is a silent version of the definite determiner.<sup>85</sup>

- (143)  $[[\text{def}]_D]^{g,c} = \lambda P_{\langle e,t \rangle}. \sigma x P(x)$

When the gender features, the [singular] feature, and the definiteness feature are combined, the following interpretations for non-bound uses of third person singular pronouns in English and German are derived.

- (144) a.  $[[er/he]^{c,g}] = [[\text{singular}]]^{g,c}([[ \text{def} ]_D]^{g,c}([[ \text{male} ]_N]^{g,c})) =$   
the unique  $x$  such that  $x$  is one or more males, defined if  $x$  is the unique male individual in  $c$  and  $x$  is an atom  
b.  $[[sie/she]^{c,g}] = [[\text{singular}]]^{g,c}([[ \text{def} ]_D]^{g,c}([[ \text{female} ]_N]^{g,c})) =$   
the unique  $x$  such that  $x$  is one or more females, defined if  $x$  is the unique female individual in  $c$  and  $x$  is an atom

<sup>85</sup>Since Kratzer (2009) also models plural personal pronouns, she adopts the denotation of the plural definite determiner, which uses Link's (1983)  $\sigma$ -operator. The  $\sigma$ -operator is the plural version of the standard  $\iota$ -operator that is used to define the denotation of the singular definite determiner (cf. Chapter 2). In an expression of the form  $\sigma x P(x)$ , the  $\sigma$ -operator picks out the unique, maximal plurality that satisfies the predicate  $P$ .

- c.  $\llbracket es/it \rrbracket^{c,g} = \llbracket \text{singular} \rrbracket^{g,c}(\llbracket \text{def} \rrbracket_D^{g,c}(\llbracket \text{thing} \rrbracket_N^{g,c})) =$   
 the unique  $x$  such that  $x$  is one or more things, defined if  $x$  is the unique  
 thing in  $c$  and  $x$  is an atom

So far, Kratzer’s account recreates the meaning proposed in Kaplan (1978 [1989]) for the referential use of first and second person singular pronouns. For third person singular pronouns, it builds up an Elbourne-style definite description account, which captures their referential, co-referential, and E-type uses.

To account for the bound uses of first, second, and third person pronouns, Kratzer’s main idea is that bound pronouns do not enter the syntax with a fully specified inherent feature specification. They are “born” with a minimal, lexically specified pronominal “base” consisting of a nominal numerical feature, see (145).

$$(145) \quad \llbracket [n]_N \rrbracket^{g,c} = g(n)$$

Note that this numerical feature more or less corresponds to a numerical index put into object language.

In addition to the numerical feature, a bound pronoun can enter the syntax with limited additional  $\phi$ -features. The full morphosyntactic feature make-up of bound pronouns, though, is built up in the course of the syntactic derivation. The bound pronouns usually acquire most of their features from their binders. These acquired features are only visible to the vocabulary insertion rules, but are not interpreted at logical form, which captures the behavior of “fake indexicals”. For full details on the specifics of Kratzer’s account, I defer the reader to Kratzer (2009).

### 1.5.5 Problems: the impersonal use and deferred ostension

The proposals in Kaplan (1978 [1989]), Heim and Kratzer (1998), and Kratzer (2009) attribute, more or less, the same meaning to the referential uses of first and second person singular pronouns: referentially used *ich* and *du* directly refer to the speaker and the addressee, respectively. Reference for the two pronouns is fixed automatically and without mediation of descriptive content. This captures the three observations on the syntactic/semantic behavior listed in Section 1.5.1: in their referential readings . . .

- *ich* and *du* have to shift in indirect discourse.
- *ich* and *du* cannot be used interchangeably; pronominal forms may not be mixed without a change in reference.
- *ich* and *du* do not show quantificational variability effects.

The first two properties are captured by the strict dependence on the utterance context of referentially used *ich* and *du*. And the inability to show quantificational variability effects falls out from the fact that the referential uses are directly referential expressions, which of course pattern like any other referential expressions.

The “fake indexical” uses of first and second person singular pronouns, which are problematic for Kaplan’s and Heim and Kratzer’s proposal, are analyzed as a genuine, independent phenomenon Kratzer (2009). “Fake indexicals” only look like true first and second person pronouns, but are underlyingly simple individual variables.

Given the above result, the meaning proposed for first and second person singular pronouns in Kaplan (1978 [1989]) and Kratzer (2009) clearly cannot be adopted to account for the impersonal use. From the point of view of the impersonal uses, the main “problem” is that direct reference to the speaker and addressee is hard-wired in the lexical entries, which means that first and second person singular pronouns are expected to only ever refer to the speaker or the addressee. This is, of course, incompatible with these pronouns being involved in determining a set of people—which may or may not contain the speaker or the addressee—about which a general statement is made. But exactly this kind of denotation seems to be required to capture impersonally used *ich* and *du*.

Apart from the impersonal uses, one further problematic case for the semantic analysis of the referential use is discussed in Nunberg (1993). Nunberg observes that indexicals, in general, and referentially used first and second person pronouns, in particular, allow for “deferred ostension”. Deferred ostension arises when first and second person singular pronouns are used to refer to particular individuals other than the speaker or the addressee, which stand in some salient relation to the speaker or the addressee. Deferred ostension for first person singular *I* is illustrated in the following example.

- (146) The condemned prisoner:  
*I am traditionally allowed to order whatever I like for my last meal.*  
 (Nunberg 1993:20)

For the sentence in (146), Nunberg argues that the pronoun *I* does not refer to the speaker since there can never be a tradition of last meals for one specific person. Instead, the speaker of this utterance wants to convey that there is a tradition for *all* condemned prisoners: ‘Traditionally, the condemned prisoner is allowed to order whatever he likes for his last meal’. Since the speaker in (146) is a condemned prisoner, the rule applies to him, and by this, the speaker also states something about himself.

Kratzer’s (2009) account—and as Nunberg notes, Kaplan’s (1978 [1989]) account—cannot capture Nunberg’s examples. For the deferred ostension cases, the reference of the first person singular pronoun is intuitively shifted to different particular individuals or individual concepts which are contributed to the truth-conditions of the sentence. This is impossible to implement if first and second person singular pronouns necessarily refer to the speaker or the addressee, respectively. For instance in Kratzer’s system, the [1st]-feature or [2nd]-feature are necessarily present at the level of Logical Form

for referentially used *I* and *you*, respectively. Hence, it is unclear when the necessary change in reference should occur in these accounts.

While I believe that the uses of first and second person singular pronouns found in deferred ostension cases and the impersonal uses constitute different problems for a strict directly referential account, I take the underlying idea of Nunberg's solution to the deferred ostension readings as the basis for a first account of the impersonal uses of *ich* and *du* in Chapter 2. There Nunberg's general criticism of direct-reference accounts in the Kaplanian tradition is also discussed further.

However, before proposing a separate, independent use for impersonally interpreted first and second person singular pronouns—be it as polysemy or homonymy, one could attempt to analyze the impersonal uses as a result of an interaction of the usual referential interpretation with other lexical elements co-occurring in the sentence. One such account, based on the “Counterfactual Hypothesis”, is discussed in the following section.

## 1.6 Arguments against a counterfactual analysis

As discussed in Sections 1.2–1.4, the impersonal reading of personal pronouns is used to express generalizations, norms, and rules that hold for animate individuals. These rules can be further restricted with the use of adverbials and *als*-phrases that provide additional descriptive content. These observations conflict with a direct reference analysis of the semantic contribution of first and second person singular pronouns, as discussed in Section 1.5. The central puzzle is how to get from expressions that contribute a specific person, i.e. the speaker or the addressee, to truth-conditions that express a general statement about individuals with a certain property, which the speaker or addressee may or may not have.

Before a general revision of the meaning of first and second person singular pronouns is attempted, or, less radically, before some form of lexical ambiguity is assumed for first and second person singular pronouns, one might try to model the impersonal uses more conservatively. One possibility is to assume that the meaning of sentences containing impersonal uses arises from an interplay of the meanings of co-occurring material while the directly referential meaning is retained for the pronouns. This idea is the basis for the *Counterfactual Hypothesis*.

(147) *Counterfactual Hypothesis*:

Sentences with impersonally interpreted singular personal pronouns are interpreted as counterfactuals. That is, the sentences hypothesize what would hold for the speaker/the addressee if he or she had the given relevant property.

The Counterfactual Hypothesis is inspired by the behavior of personal pronouns in identity counterfactuals, as in example (148).

- (148) *Wenn ich du wäre, würde ich mir jemanden anderen suchen.*  
 if I you were would I me someone other search  
 ‘If I were you, I would look for someone else.’

In identity counterfactuals, the subject of the copula clause in the antecedent is assumed to be (in the situation experienced by) another person. The consequent clause then ascribes a property to the subject under this assumption. If the subject of the identity counterfactual is a first person singular pronoun, the effect arises that the speaker “puts herself in the shoes” of another person. In example (148), for instance, the speaker puts herself in the shoes of the addressee, and states what she would do in the addressee’s stead.<sup>86</sup>

In analogy to these identity counterfactuals, one might assume that when sentences contain “impersonally used” *ich* or *du*, the speaker counterfactually assumes herself to be a member of the group of individuals for which the generalization is stated. For example, the sentences in (149-a) and (150-a) might express the counterfactual statements in (149-b) and (150-b), respectively.

- (149) a. *Wenn ich als Mannschaft gewinnen will, muss ich kämpfen.*  
 if I as team win want must I fight  
 b. If I were a team and wanted to win, I would have to fight.
- (150) a. *Wenn du als Mannschaft gewinnen willst, musst du kämpfen.*  
 if you as team win want must you fight  
 b. If you (add.) were a team and wanted to win, you would have to fight.

At least two reasons can be given for why the Counterfactual Hypothesis needs to be discarded: First, the counterfactual paraphrases cannot be derived without either violating compositionality, or discarding the Kaplanian semantics for the pronouns, which would go against the initial motivation for the hypothesis. Second, the counterfactual paraphrases do not capture the intuitive meaning of the data, and make false predictions with respect to what can be expressed with sentences of this kind.<sup>87</sup>

The compositionality problem arises because there is no lexical material which, on the one hand, obligatorily co-occurs with the impersonal readings of *ich* and *du*, and, on the other hand, could be assumed to contribute the necessary meaning components for a counterfactual interpretation.

<sup>86</sup>Malamud (2006) uses identity counterfactuals as inspiration for her account of the impersonal use of English *you*. Her account is discussed in Chapter 2.

<sup>87</sup>Alonso-Ovalle (2000) argues against a similar analysis for impersonal second person singular in Spanish. He states that looking at the most normal worlds in which the counterparts of the addressee have the relevant properties is too weak to capture the generalization that is expressed with sentences containing an impersonally used second person singular pronoun.

The morphological marking found with the verbs in the collected data does not support the Counterfactual Hypothesis since the verbal mood is consistently indicative. Hence as far as morphological marking is concerned, attributing a counterfactual semantics, which is exclusively connected to irrealis mood, to the data seems unmotivated.

But even though this is not attested for actual counterfactual conditionals, let us assume for the sake of the argument that the indicative mood in connection with other lexical material may be interpreted just like an irrealis mood. Then another, although relatively minor problem arises: impersonal readings occur in a range of different sentences, not all of which have an overt conditional structure, or even contain an overt modal expression. Consider examples (151) and (152).

(151) *Ich muss als Mannschaft auf meinen Trainer hören.*  
 I must as team my coach obey  
 ‘A team has to obey its coach.’

(152) *Ich zahle doch als Konzern nicht einfach für nichts.*  
 I pay PRT as corporate-group not simply for nothing  
 ‘A corporate group doesn’t just pay without expecting anything in return.’<sup>88</sup>

For examples with no overt conditional structure as (151) and (152), the conditional structure of the desired counterfactual interpretation has to be derivable in some way.

Since example (151) contains an overt modal, i.e. a quantificational operator, a solution regarding the missing conditional structure might be found in the literature on quantificational structures (cf. Partee 1992). A well-known observation is that sometimes, material is interpreted in the restrictor of a *for* which the surface order suggests that it is in the scope of a quantificational expression even though the surface order suggests that it is in the scope of that expression. The semantics of modal operators proposed in Kratzer (1977, 1981a, 1991) would then relate the restrictor and the scope of the modal in a conditional-like fashion.

For the appropriate identity counterfactuals to be derived, at least the *als*-phrase needs to be interpreted in the restrictor of the modal. And indeed, one characteristic property of German *als*-phrases is that they can be interpreted in the restrictor of a sentential operator.<sup>89</sup> To arrive at the relevant counterfactual for example (151), the *als*-phrase, *als Mannschaft* (Engl. ‘as a team’), even seems to be the only material that is needed in the restrictor, see (153).

(153) *If I were a team, I would have to obey my coach.*

Even though the *als*-phrase seems to be the missing link for the Counterfactual Hy-

<sup>88</sup>Shortened from <http://www.spongeblog.de/567/2006/07/07/zeiss-of-jena/>

<sup>89</sup>Cf. the discussion of German nominal *als*-phrases in Appendix A1.

pothesis to work, there are three reasons for why the *als*-phrases do not provide the solution: (i) *als*-phrases only restrict quantificational operators that co-occur with them in a clause, (ii) they never directly modify the lexical meaning of the operators that they restrict, and (iii) they are optional (cf. Section 1.3).

An example illustrating the first point is (152), which contains no overt quantificational operator. Since *als*-phrases are not indicators for the presence of a covert quantificational operator if no overt operator is present—in contrast to *if*-clauses (cf. Kratzer 1986)—it is unclear which operator the *als*-phrase would restrict to derive the desired counterfactual interpretation in (154).

(154) *If I were a corporate group, I wouldn't just pay without expecting anything in return.*

The second counter-argument is illustrated by the following example.

**Context:** Maria occasionally takes on various part-time jobs on week-ends to earn some extra money (but only always a single one). Her two friends, A and B, discuss her work hours.

(155) A: *Maria muss als Kellnerin acht Stunden ohne Pause arbeiten.*  
 Maria must as waitress eight hours without break work  
 A: 'When Maria takes on a job as a waitress, she has to work eight hours with no break.'

The *als*-phrase, *als Kellnerin* (Engl. 'as a waitress'), can restrict the modal *muss* to those week-ends where Maria is a waitress.<sup>90</sup> It can never induce an irrealis interpretation of *muss*, though. If it were known that Maria never did any waitressing in her life, the sentence above simply could not be used in this context. Example (155) simply cannot express the following counterfactual statement.

(156) *If Maria were a waitress, she would have to work eight hours with no break.*

Other optional material that supports the impersonal reading of *ich* and *du*, and that may be interpreted as restricting the domain of a modal operator behaves just like *als*-phrases do. Example (157) illustrates the behavior of spatial adverbials.

(157) *Maria muss im Schulgebäude ihre Straßenschuhe ausziehen.*  
 Maria must in-the school-building her outdoor-shoes take-off  
 'When Maria is inside the school building, she has to take off her outdoor shoes.'

The rule expressed in (157) implies the counterfactual statement in (158).

<sup>90</sup>Example (155) can also be interpreted with the *als*-phrase outside the restrictor or scope of *müssen* (Engl. 'must'). In this case, it should be translated as 'Since she is a waitress, Maria has to work eight hours with no break'.

(158) *If Mary were inside the school building, she would have to take off her shoes.*

The examples in (158) and (157), however, do not express the same statement. For instance, if Maria ceased to be a student, and her mother reminisces about the school rules, then Maria's mother could not use (157) to express the counterfactual in (158).

So neither *als*-phrases nor adverbials can induce the counterfactual interpretation by restricting a modal in the indicative. The optionally co-occurring discourse particles (e.g. *ja*, *doch*, *wohl*, ...) are even more implausible candidates to modify verbal mood. It is a well-known fact that the central function of discourse particles is of a pragmatic nature, and usually involves commenting on the semantic content of the utterance in the specific discourse context (cf. Zimmermann 2011a and Appendix A2). If it is assumed that a covert subjunctive modal provides the necessary ingredient for the counterfactual interpretation, another problem arises: one would have to explain why the impersonal readings only occur with the covert subjunctive operator, but overt irrealis marking on the verb blocks the impersonal interpretation (cf. Section 1.3).

In sum, no overt lexical material present in the data can contribute the meaning components that are needed to make up the presumed meaning of the sentences under the Counterfactual Hypothesis.

The second, even stronger reason to discard the Counterfactual Hypothesis is simply that the counterfactual paraphrases do not capture the intuitive meaning expressed by the data. Specifically, it predicts certain restrictions on the use of sentences containing impersonally used *ich* and *du* which are not observed.

One central characteristic of identity counterfactuals is that certain parts and aspects of the subject are retained. In example (148), the point of view and the character of the speaker, picked out by the referential use of *ich/I*, still remain her point of view and character in the hypothetical situation of her being (in the situation experienced by) the addressee. That is, the sentence does not express that the speaker is completely identical to the addressee. If the latter were the case, it would be incoherent to state that the speaker would act differently in the first place. The observation that individuals retain their own point of view, character, and special characteristic properties is true for counterfactuals in general. Consider the following example.

**Context:** Speaker A is a linguist. He is also a great hobby athlete, and his special talent is long distance sprinting. In fact, he can catch anyone who attempts to run away from him. He could state (159) truthfully.

(159) A: *Ich könnte als Polizist bei Verfolgungsjagden die Flüchtigen fangen.*  
 I could.SUB as police-officer at chases the fugitives catch

A: 'If I were a police officer, I would be able to catch the fugitives at chases.'

Similarly, a friend of A's could truthfully utter (160).

- (160) B: *Du könntest als Polizist bei Verfolgungsjagden die Flüchtigen fangen.*  
 you could.SUB as police-officer at chases the fugitives  
 catch  
 B: 'If you were a police officer, you would be able to catch the fugitives at chases.'

In case of impersonally used *ich* and *du*, the personality and personal characteristics of the speaker and the addressee are completely inaccessible, though. That is, even though A and his friend are aware of A's special talent, the impersonal use of *ich* and *du* is blind to this information. Both examples in (161) express general statements about police officers of any kind, not only about those officers who share Peter's special talent.

- (161) a. *Ich kann als Polizist bei Verfolgungsjagden die Flüchtigen fangen.*  
 I can as police-officer at chases the fugitives  
 catch  
 'A police officer is able to catch the fugitives at chases.'  
 b. *Du kannst als Polizist bei Verfolgungsjagden die Flüchtigen fangen.*  
 you can as police-officer at chases the fugitives  
 catch  
 'A police officer is able to catch the fugitives at chases.'

If the impersonal readings were special cases of counterfactual statements, this difference would not be expected to arise.<sup>91</sup>

Another prediction of the Counterfactual Hypothesis that turns out to be false is that the impersonal uses of *ich* and *du* should only be restricted to generalizations about sets of individuals that the speaker and the addressee do not belong to. Consider the pragmatic oddness of a female individual, say Susan, using the following counterfactual.

- (162) Susan: #*Wenn ich eine Frau wäre, müsste ich mehr leisten als die Männer.*  
 if I a woman be.SUB, must.SUB I more achieve than  
 the men  
 Susan: #'If I were a woman, I would have to achieve more than the men.'

It is, however, completely natural for a female individual to state the following generalization about women using impersonally interpreted *ich*.

<sup>91</sup>I thank Rajesh Bhatt (p.c.) for pointing this out to me.

- (163) Susan: *Ich muss als Frau mehr leisten als die Männer.*  
 I must.IND as woman more achieve than the men  
 Susan: ‘A woman has to achieve more than men.’

The Counterfactual Hypothesis would assign the counterfactual in (162) to (163). Hence, the same pragmatic oddness is falsely predicted to arise. Analogously, the impersonal use of *du* should be pragmatically odd whenever the addressee is part of the group of relevant individuals, which is also not observed.

In sum, the discussion above to my mind convincingly shows that the Counterfactual Hypothesis is inadequate as an analysis for the impersonal readings of first and second person singular pronouns. It is not only unclear how the counterfactual semantics should be derived compositionally from the material given in the sentence, the proposed counterfactual meaning also does not capture the intuitive meaning expressed by the data, and makes false predictions concerning their use.

I will not further address elaborations of the Counterfactual Hypothesis that argue that the counterfactual meaning is contributed either by the personal pronoun itself or a context shift. As was stated above, the idea to let the personal pronoun introduce the counterfactual interpretation goes against the assumption that motivated the Counterfactual Hypothesis in the first place, i.e. that the directly referential semantics for first and second person singular pronouns is maintained. An analysis based on the assumption that the impersonal interpretation arises from context shifted indexicals—without interpreting these sentences as counterfactual statements—has to be looked at separately. Such an analysis would introduce an additional assumption on context shift under modal expressions for languages like German and English, which do not show context shifts in the paradigmatic cases, i.e. under verbs of saying (cf. Schlenker 2003). This line of investigation is briefly addressed in the Conclusion, but not considered in detail.

In the following chapter, I pursue a more promising account based on the observation of truth-conditional equivalence between the impersonal uses of *ich* and *du* and the impersonal pronoun *man*, and on Nunberg’s (1993) deferred ostension cases.

## 1.7 Summary and outlook

The main conclusion of this chapter is that the impersonal use of first and second person singular pronouns is independent from their referential use (cf. Section 1.5). In Section 1.6, I showed that analyzing sentences containing impersonally used *ich* or *du* as counterfactual statements fails to capture the intuitive behavior of the data.

So, for the following further investigations in the subsequent chapters, I take the following characteristics (as established in Sections 1.2–1.4) as starting point:

- Without exception, sentences containing impersonally used *ich* and *du* express general statements, rules, norms, and generalizations of other kinds, i.e. they are generic sentences. Furthermore, impersonal readings are unavailable in episodic statements.
- The impersonal uses of *ich* and *du* are truth-conditionally equivalent with the impersonal pronoun *man*.
- On a pragmatic level, the impersonal uses of *ich* and *du* and the impersonal pronoun *man* convey speaker-orientation.
- Regarding participant-oriented pragmatic effects, impersonally interpreted *ich* is used to signal distance, while impersonally interpreted *du* aims to build closeness between the speaker and the addressee.

Chapter 2 focusses on the semantics of the impersonal uses, and aims to capture these characteristics in a unified semantics for the impersonal and referential uses. In Chapter 4, though, this unified account is discarded, and an account which makes minimal assumptions with respect to the semantics, but focusses on the pragmatic characteristics of the impersonal uses is proposed.

The blocking and supporting effects observed in Section 1.3 will not be explicitly addressed. These effects seem to be connected to the distinction between episodic vs. generic interpretations of a given sentence. Since impersonal readings only arise in sentences that express a generic statement, I suggest that these effects are not directly connected to the meaning of the impersonal uses, but are connected to more basic considerations regarding the episodic/generic distinction.

# Chapter 2

## *Ich* and *du* – a first try

### 2.1 Introduction

The central result of the previous chapter was that the impersonal uses of German first and second person singular *ich* and *du* constitute distinct uses of these pronouns. It was shown that impersonally interpreted *ich* and *du* and the impersonal pronoun *man* are in fact truth-conditionally equivalent, and that the impersonal uses of *ich* and *du* differ in their truth-conditional contribution from their predominant referential uses.

In this chapter, the truth-conditional equivalence between the impersonal uses of *ich* and *du* and the impersonal pronoun *man* is explored further. The central aim is to propose a unified account for personal pronouns independently of their uses. The account that is subsequently presented in Section 2.5.3 is inspired by the discussion of indexical expressions in Nunberg (1993), and is formally based on a semantic proposal inspired by this account put forth in Elbourne (2008) (cf. Section 2.5). The account also incorporates ideas from the literature on impersonal pronouns summarized in Section 2.2 (Chierchia 1995b; Condoravdi 1989; Malamud 2006, 2007; Moltmann 2006, 2010a), and from the literature on impersonal uses of personal pronouns, notably Malamud (2006, 2007) as presented in Section 2.3.

In Section 2.6, I discuss the problems and issues faced by the account presented in Section 2.5.3. Many of these problems are connected to what I call the “(In)definiteness Problem”, which arises as soon as one aims to give a unified account for the various, distinct uses of personal and impersonal pronouns. Furthermore, I compare the account proposed in this chapter (and its issues) to the account proposed in Malamud (2006).

## 2.2 The semantics of impersonal pronouns

### 2.2.1 Syntactic and semantic properties of impersonal pronouns

Traditionally, the class of pronouns is divided into seven subclasses: personal pronouns, reflexive pronouns, reciprocal pronouns, possessive pronouns, demonstrative pronouns, relative and interrogative pronouns, and indefinite pronouns.<sup>1</sup> The German pronoun *man* (Engl. ‘one’) and its counterparts in other languages are classified as indefinite pronouns. The members of this class are assumed to share the semantic characteristic of referring to an unspecific, possibly unknown entity or group of entities.<sup>2</sup> In the anglophone literature, indefinite pronouns are usually called “impersonal pronouns” or “arbitrary pronouns”.<sup>3</sup> In the recent literature, however, the classification of *man* as an indefinite pronoun has been contested on the basis of its syntactic and semantic behavior in its “existential use” (cf. Zifonun 2000 among others).

The aim for Section 2.2 is to give an overview of the literature on impersonal pronouns. I first discuss their special syntactic and semantic behavior, and then turn to previous proposals to capture their interpretation in the literature. In the last part, the behavior of the problematic existential use of German *man* is compared to that of other indefinite pronouns. Even though the focus of the discussion lies on German *man* and English *one*, impersonal pronouns in other languages are also considered at various points, i.e. Italian *si* and Spanish *se*.

A quick review of the literature on German *man* and English *one* already reveals that crosslinguistically, impersonal pronouns do not behave uniformly. Relative to the range of uses an impersonal pronoun allows, it falls into one of the following three classes.<sup>4</sup> The first class is characterized by allowing only that basic impersonal interpretation, as discussed in Section 1.2.2.<sup>5</sup> The second class allows the basic impersonal use and

<sup>1</sup>In traditional German grammar, indefinite pronouns are called “Impersonalpronomen”.

<sup>2</sup>For German, the following pronouns are also put into the class of indefinite pronouns; note, that their English translations are only rough equivalents: *all, alle, allesamt, sämtlich* (Engl. ‘all’), *andere* (Engl. ‘others’), *beide* (Engl. ‘both’), *einer* (Engl. ‘one’), *einige, etliche, mehrere* (Engl. ‘several’), *ein bisschen, ein wenig* (Engl. ‘a bit’), *ein paar* (Engl. ‘a couple/ a few’), *irgendein, irgendwelche, etwas, irgendetwas, irgendwas, was* (Engl. ‘something’), *irgendwer, jemand, irgendjemand, welche, wer* (Engl. ‘someone’), *jeder, jeglicher, jedermann* (Engl. ‘everyone’), *kein* (Engl. ‘no’), *manche* (Engl. ‘some’), *mancher* (Engl. ‘some people’), *meinesgleichen* (Engl. ‘the likes of me’), *nichts* (Engl. ‘nothing’), *niemand* (Engl. ‘no one’). Some of these pronouns are also used as determiners, and are put into the class of “quantificational determiners”.

<sup>3</sup>Note that the English term “impersonal pronoun” covers a much more restricted set of expressions than the direct German translation “Impersonalpronomen”. I use “impersonal pronoun” in the restricted English sense throughout this thesis.

<sup>4</sup>The different readings that are available for the impersonal pronouns of some languages are sometimes called the “quantificational variability of impersonal pronouns”. To avoid confusion, I want to reserve the term “quantificational variability (effects)” for the phenomenon which was first described in Lewis (1975), see the data discussion in Section 1.2.2 and 2.4.

<sup>5</sup>In the literature on impersonal pronouns, the basic impersonal use is usually called an impersonal

an additional existential use. And the third class allows a referential use in addition to the impersonal and existential uses. So given this classification, the impersonal use immediately falls out as the basic use shared by all impersonal pronouns, i.e. their common core.

English *one* falls into the first class of impersonal pronouns. In contrast, dialectal variation across all three classes can be observed for German *man* (cf. Kratzer 1997; Malamud 2007, 2012). The German examples used to illustrate the behavior of *man* in this section are grammatical in a dialect for which *man* falls into the third class.<sup>6</sup>

As discussed in Section 1.2, the impersonal use of *man* and *one* occurs in sentences that express rules, norms, or generalizations, and which need to be grouped among the class of generic sentences. This is again illustrated in (1) and (2).

- (1) *Man verwendet kein Schwert um eine Schnecke zu töten.*  
 one uses no sword to a snail to kill
- (2) *One does not use a sword to kill a snail.* (Yoruba proverb)

The existential use occurs in sentences that report or describe a specific situation, i.e. in episodic statements. In this use, *man* can be paraphrased by *jemand* (Engl. ‘someone’), see (3).

- (3) *Man hat mir gestern mein Fahrrad gestohlen.*  
 one has me yesterday my bike stolen  
 ‘Yesterday, someone stole my bike.’

The referential use of German *man* contrasts with the existential reading, in that the individual referred to is not an arbitrary third person (i.e. ‘someone’). Instead, referentially used *man* seems to have a similar denotation to the first person plural pronoun *wir* (Engl. ‘we’), see (4).<sup>7</sup>

- (4) *Man war gestern zuerst essen und dann im Kino.*  
 one was yesterday first eating and then in-the cinema  
 ‘Yesterday, we first went for dinner and then to the movies.’

For impersonal pronouns with more than one possible reading, e.g. German *man*, the split between the existential use, on the one hand, and the impersonal use, on the other

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pronoun’s “generic” use. However, to maintain the parallel with the impersonal uses of personal pronouns also regarding terminology, I do not adopt this name.

<sup>6</sup>There is a difference in the frequency of use between *one* and *man*. *One* seems to fall out of use, and is replaced by impersonally used *you*. In contrast, *man* is still frequently used, and the impersonal uses of the first and second person singular pronouns appear to be secondary options. For a clear picture, however, detailed cross-linguistic corpus work is necessary, which is left for further research.

<sup>7</sup>Note that Zifonun (2000) presents examples for which she argues that *man* may be substituted with personal pronouns other than first person plural *wir*. She suggests, however, that the referential use of *man* is not an independent third reading, but that cases of referential uses constitute special cases of both impersonal and existential uses.

hand, depends on the episodic/generic distinction for statements. Episodic statements describe specific events that are spatiotemporally fixed and involve specific, but possibly unknown, (groups of) actors or participants. In contrast, impersonal pronouns that do not have an existential use, e.g. English *one*, are ungrammatical in sentences expressing episodic statements. Example (5) is the direct translation of German (3).<sup>8</sup>

- (5) *One stole my bike yesterday.*  
 Unavailable: ‘Someone stole my bike yesterday.’

Given the truth-conditional equivalence of the impersonal uses of *ich*, *du*, and *man* observed in Section 1.2, only the (morpho-)syntactic and semantic behavior of the impersonal use is for now of special interest; the existential and referential uses are not discussed in any further detail.

The morphosyntactic agreement patterns of *man* and *one*—in all of their uses—are the same as for the third person singular pronouns in the respective languages: verbal agreement is uncontroversally third person singular, see (2). For German *man*, which can co-refer with and bind possessives, the agreement can be further narrowed down to third person singular masculine agreement, see (6).

- (6) *Man muss seine Zähne putzen.*  
 one must.3RD his.3MSG teeth clean  
 ‘One has to brush one’s teeth.’

Even though they share similar agreement patterns, German *man* and English *one* differ in their lexical paradigms, and consequently in their restrictions regarding the syntactic positions in which they may occur. German *man* only exists in nominative form and is thus restricted exclusively to subject position. For accusative and dative case, but not for genitive case, *man* has suppletive forms taken from the paradigm of the indefinite pronoun *einer* (Engl. ‘one’, ‘someone’, see Zifonun 2000). English *one* also preferably appears in subject position, but can additionally form a Saxon genitive and a reflexive pronoun. In object positions, it is degraded, but no alternative suppletive forms exist (Malamud 2006; Cabredo-Hofherr 2008).<sup>9</sup>

Notable syntactic and semantic properties of the impersonal use of impersonal pro-

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<sup>8</sup>Note that English has at least one other lexical item *one* which can occur in episodic statements, and which is used anaphorically to previously introduced noun phrases. In (i), *one* is anaphoric to the modified noun phrase *big apple*.

- (i) *Mary ate a big apple and Peter a small one.*

Generic *one* and anaphoric *one* historically developed from two distinct sources, and do not constitute the same alternation as German generic and existential *man* (cf. Safrir 2004).

<sup>9</sup>A small cross-linguistic comparison on syntactic restrictions: French *on* and Yiddish *men* have only nominative forms and no suppletive paradigm, and can thus only occur in subject position. In contrast,

Spanish *uno* also occurs with accusative case (Cabredo-Hofherr 2008).

nouns are its puzzling co-reference and binding behavior, and the possibility for quantificational variability effects with adverbs of quantification (cf. Section 1.2).<sup>10</sup>

The first observation is that cross-clausal co-reference is possible for two occurrences of an impersonally interpreted impersonal pronoun, but never between an impersonal pronoun and a third person pronoun. As (7) and (8) show, multiple occurrences of impersonal uses in coordinated clauses may co-refer, but do not have to.

- (7) a. *Man<sub>i</sub> muss seine<sub>i</sub> Wohnung aufräumen, sonst kann man<sub>i/j</sub> sich<sub>i/j</sub> dort nicht wohlfühlen.*  
 one must one's flat clean-up otherwise can one oneself  
 there not feel-comfortable
- b. *One<sub>i</sub> has to clean one<sub>i</sub>'s flat, or else one<sub>i/j</sub> can't feel comfortable there.*
- (8) a. *Man<sub>i</sub> muss seine<sub>i</sub> Wohnung aufräumen, sonst kann er<sub>\*i/j</sub> sich<sub>\*i/j</sub> dort nicht wohlfühlen.*  
 one must one's flat clean-up otherwise can he oneself  
 there not feel-comfortable
- b. *One<sub>i</sub> has to clean one<sub>i</sub>'s flat, or else he<sub>\*i/j</sub> can't feel comfortable there.*

This behavior parallels the referential behavior of first and second person singular pronouns, which also cannot co-refer or bind different referential expressions (Malamud 2006, Moltmann 2006, Cabredo-Hofherr 2008, *pace* Safir 2004).

Note, that the presence of different indices on impersonally used impersonal pronouns does not automatically mean that two *disjoint* sets of individuals are generalized about. For instance, the sentences in (7) could be interpreted in such a way that the first occurrence talks about flat owners and the second occurrence simply about individuals in general. In this case, the set of flat owners is a subset of the set of individuals, and the two sets are not disjoint.

In contrast, anaphoric impersonally used impersonal pronouns in subordinated clauses are referentially dependent on other, co-occurring instances. In these cases, the dependant occurrences behave either like bound or like E-type pronouns. Thus the conditional rule expressed by a sentence like those in (9) holds for each individual in the set of people generalized over, individually.<sup>11</sup> Compare examples (7) and (8) with the sentences in (9).

- (9) a. *Wenn man<sub>i</sub> sich<sub>i</sub> dort wohlfühlen will, muss man<sub>i/\*j</sub> seine<sub>i/\*j</sub> Wohnung aufräumen.*  
 if one oneself there feel-comfortable wants must one one's  
 flat clean-up
- b. *If one<sub>i</sub> wants to feel comfortable there, one<sub>i/\*j</sub> has to clean one<sub>i/\*j</sub>'s flat .*

<sup>10</sup>The following discussion of the co-reference and binding behavior of impersonal pronouns is based on Cabredo-Hofherr (2004), Cabredo-Hofherr (2008), Creissels (2011), and Zifonun (2000).

<sup>11</sup>For an introduction to bound and E-type uses, see Section 1.5.2.

Table 2.1 summarizes these results (adapted from Cabredo-Hofherr 2004, 2008).<sup>12</sup>

	3msg subject	3msg direct object	3msg possessive	impersonal
<i>man</i> impersonal	no	no	yes	yes
<i>one</i> impersonal	no	no	no	yes

Table 2.1: Material that can be anaphoric to *man* and *one* across clauses

The impersonal uses of German *man* and English *one* exhibit different inner-clausal binding behavior. English *one*, in contrast to *man*, cannot bind reciprocals, third person reflexives, or possessives, see (10)–(12).

- (10) a. *Man<sub>i</sub> muss miteinander<sub>i</sub> reden.*  
 one must with-each-other talk  
 b. *One<sub>i</sub> has to talk to one<sub>i</sub> another/ \*each other<sub>i</sub>.*
- (11) a. *Man<sub>i</sub> muss seine<sub>i</sub> Wohnung putzen.*  
 one must his flat clean  
 b. *One<sub>i</sub> has to clean one<sub>i</sub>'s/\*his<sub>i</sub> flat.*
- (12) a. *Man<sub>i</sub> muss an sich<sub>i</sub> glauben.*  
 one must to himself/herself believe  
 b. *One<sub>i</sub> has to believe in oneself<sub>i</sub>/\*himself<sub>i</sub>.*

One possible explanation for this contrast is simply that *one* has specific forms based for these three cases, which *man* lacks. Table 2.2 summarizes these results.

In sum, impersonal pronouns may have three uses: an impersonal use, an existential use, and a referential use. Of these three uses, only the impersonal use is observed for impersonal pronouns cross-linguistically. Regarding their syntactic behavior, impersonal pronouns do not behave uniformly cross-linguistically. However, with respect to

<sup>12</sup>The co-reference possibilities between two existential uses of impersonal pronouns seem to be more restricted than those between two impersonal uses. Creissels (2011) observes for French *on* that in the existential reading, cross-sentential anaphoric relations between two occurrences of *on* are not always possible. He suggests that anaphoric *on* is constrained to those cases for which the second sentence elaborates on the first. He considers the contrast in (i)

- (i) a. \**On<sub>i</sub> t'a appelé au téléphone; on<sub>i</sub> avait un accent allemand.*  
 'Someone called you; they had a German accent.'  
 b. *On<sub>i</sub> t'a appelé au téléphone; on<sub>i</sub> parlait avec un accent allemand.*  
 'Someone called you; they talked with a German accent.'

This is less strongly paralleled in German. While the second example is perfectly grammatical, the first feels incoherent.

- (ii) a. #*Man<sub>i</sub> hat mich angerufen; man<sub>i</sub> hatte einen französischen Akzent.*  
 'Someone called me; they had a German accent.'  
 b. *Man<sub>i</sub> hat mich angerufen; man<sub>i</sub> hat nach dir gefragt.*  
 'Someone called me; they asked about you.'

	3sg reflexives	3p reciprocals	3msg possessive	impersonal
<i>man</i> impersonal	yes	yes	yes	yes
<i>one</i> impersonal	no	no	no	yes

Table 2.2: Material that may be anaphoric to *man* and *one* inside the same clause

their restrictions regarding co-reference and binding of different referential expressions, they behave similarly to first and second person singular pronouns.

## 2.2.2 Previous semantic analyses of impersonal pronouns

So far, the results in this section regarding the (morpho-)syntactic and semantic properties of *one* and *man* seem to be inconclusive regarding their semantic contribution. The co-reference and binding behavior together with the morphosyntactic agreement patterns suggest that *man* and *one* are similar to personal pronouns on some level. And as discussed in Chapter 1, personal pronouns are traditionally analyzed as definite expressions, i.e. as either directly referential expressions or definite descriptions (this of course does not take into account the impersonal uses). In contrast, the availability of quantificational variability effects and the existence of an existential use for *man* point towards a similarity with indefinite noun phrases; both observations would be unexpected if impersonal pronouns were referential expressions (i.e. definites).

In the literature, the semantic contribution of impersonal pronouns has been related to the notion of “arbitrary reference”. This is based on the intuition that impersonal pronouns do not denote specific (groups of) individuals: in their impersonal use, they seem to refer to an arbitrary individual while in their existential use, they seem to denote an unspecific individual (Cabredo-Hofherr 2004, 2008; Cinque 1988; Zifonun 2000).

In accordance with the inconclusiveness regarding their (in)definiteness, there is no consensus on how impersonal pronouns are best modelled formally.<sup>13</sup> The majority of the analyses put forth in the literature model impersonal pronouns after indefinite noun phrases (Condoravdi 1989; Chierchia 1995b; Alonso-Ovalle 2000, 2002; Malamud 2006; Moltmann 2006, 2010a). However, two exceptions are Kratzer (1997) and Safir (2004) who both propose an analysis as definites for *man* and *one*, respectively.

One type of indefinite account is proposed in Condoravdi (1989), Malamud (2006), and Moltmann (2006), who investigate the semantic behavior of English *one*. Condoravdi (1989) argues that *one* is an inherently generic expression which introduces a variable that is bound by a generic operator at sentence level. That is, the impersonal

<sup>13</sup>To capture the inconclusive behavior of impersonal pronouns, König and Mauner (1999) introduce a third type of noun phrase which they call “a-definites”. A-definites behave like indefinites, but do not introduce new discourse referents. König and Mauner’s analysis is motivated by a connection between impersonal pronouns and implicit arguments in passives.

pronoun *one* acts like a Heimian indefinite (cf. Heim 1988 [1982]). A similar idea is put forth in Moltmann (2006) and Malamud (2006). A simplified representation of the truth-conditions for (13-a) based on these accounts is given in (13-b).

- (13) a. *One respects others' rights.*  
 b. Gen  $x$ [respects-other's-rights( $x$ )]

Note that the generic operator has scope over the entire sentence, which means that it can bind potentially more than one individual variable contributed by different occurrences of *one*. The result is, as intended, quasi-universal quantification over individuals.

To capture the quantificational variability effects, it has to be assumed that the free variable contributed by *one* can alternatively be bound by an adverb of quantification instead of the generic operator, see (14).<sup>14</sup>

- (14) a. *One usually respects others' rights.*  
 b. Usual  $x$ [respects-other's-rights( $x$ )]

Since *one* does not allow for an existential reading, it needs to be explicitly excluded that the individual variable contributed by *one* can be bound by an existential quantifier. For *man*, on the other hand, existential quantification is an option in episodic sentences. This can be modelled by assuming existential closure at the verb phrase level (cf. Diesing 1992), which introduces an existential quantifier over individuals which binds the variable contributed by the impersonal pronoun. Existential closure can be seen as a last resort strategy if no generic operator or adverb of quantification is present, i.e. in case the sentence expresses an episodic statement. The formalization of the existential use of *man* is illustrated in (15-a).

- (15) a. *Man hat mir mein Fahrrad gestohlen.*  
 one has me my bike stolen  
 'Someone stole my bike.'  
 b.  $\exists x$ [stole-my-bike( $x$ )]

Chierchia (1995b) and Alonso-Ovalle (2000, 2002) choose a slightly different route for Italian and Spanish, respectively. Chierchia (1995b) analyzes Italian *si* as an operator on one-place predicates. The function of the operator is to existentially bind a sortally restricted variable carrying a distinguished index *arb* that is taken as an argument by the one-place predicate, see (16). Note that this predicts that the basic reading of *si* is its existential reading available in episodic sentences.

- (16)  $SI(P) = \exists x_{arb}[P(x_{arb})]$   
 where  $P$  is a one-place predicate, and  $x_{arb}$  is sortally restricted to humans

<sup>14</sup>The notation in (14) is taken from Heim (1988 [1982]).

For the generic operator, Chierchia adopts an account in the framework of situation semantics.<sup>15</sup> He assumes that the generic operator only binds situation variables, which means that  $x_{arb}$  remains existentially bound in its generic use. The perceived quasi-universal quantification over individuals is the result of quantification over situations, and is captured by closely restricting the domain of situations (cf. Chierchia 1995b; von Stechow 2004/1995).

Chierchia's analysis of quantificational variability effects also differs from the one above. He assumes that in contrast to the generic operator, adverbs of quantification may quantify over individuals. Hence, in the case of quantificational variability effects, the adverbs can force existential disclosure of the sortally restricted variable that is bound afterwards (cf. Dekker 1993). Unfortunately it is not addressed why this is not an option for the generic operator, as well.

Alonso-Ovalle (2000, 2002) adopts Chierchia's account for the Spanish impersonal pronoun *se*, but assumes that the generic operator quantifies over both individuals and situations. That is like adverbs of quantification, the generic operator triggers existential disclosure of the sortally restricted variable before binding it.

In sum, the "indefinite accounts" in Condoravdi (1989), Malamud (2006), Moltmann (2006), Chierchia (1995b), and Alonso-Ovalle (2000, 2002) are able to derive the generic and the existential use of German *man*. For English *one*, all accounts need to be restricted explicitly to keep them from predicting an existential use for *one*, as well. Alternatively, the generic operator could be hard-wired into the lexical entry for *one*.

Chierchia's (1995b) assumption that impersonal pronouns introduce an existentially bound variable by default predicts that the existential use is the default use. This is problematic since the default use should be the impersonal use, which was identified in the previous section as the cross-linguistic common core of impersonal pronouns. Furthermore for English *one*, Chierchia would have to assume that the existential quantifier introduced by the operator SI is always removed by existential disclosure, i.e. that the lexical entry for *one* never occurs in its unmodified form.

The indefinite accounts discussed above contrast with the accounts in Kratzer (1997) and Safir (2004). Kratzer and Safir take a different point of view on the data, and conclude that English *one* and German *man*, respectively, should be analyzed as definite expressions.

Safir (2004) observes that English *one* has a peculiar connection to the discourse context. Two discourse participants can contradict one another using *one*, as in (17). For A to contradict B is only possible, he argues, if the referent of *one* is the same in both utterances.<sup>16</sup>

<sup>15</sup>Chierchia (1995b) adopts the view on situations as parts of possible worlds proposed in Kratzer (1989).

<sup>16</sup>Since Safir assumes that *one* is a definite, i.e. a referential, expression, he assumes that it contributes a particular referent to the truth-conditions of a sentence.

- (17) A: *One should be kind.*  
 B: *One should not be kind.*  
 (Safir 2004:1)

However, the referent of *one* seems to change relative to the discourse context—specifically, relative to the current participants. That is, the contribution of A’s use of *one* in (17) in some sense differs from the contribution of B’s use of *one* because of the change of speaker. Based on this observation, Safir proposes that it is the participants in the discourse that provide a pool of individuals that is used to compute the referent of *one*. This is illustrated in Safir’s discussion of (18).

**Scenario:** At an interstellar conference, a Martian addresses other extra-terrestrials.

- (18) *Fortunately, one is not susceptible to human disease.*

In this context, the utterance is fine, Safir argues, since property “not being susceptible to human disease” applies to the majority of the Martian’s audience. If used in a context in which the Martian addresses only humans, however, the utterance in (18) has an exclusionary flavor to it. Safir suggests that this is the case because with the use of *one*, the Martian communicates that he does not consider humans, who are susceptible to human disease, to have an effect on his contextual assumptions about the referent of *one*.

Safir concludes that *one* involves constancy of reference with respect to utterance contexts parallel to the constancy of reference observable with indexicals, e.g. first person singular *I* always refers to the same person as long as the utterance context is held constant. However unlike indexicals, English *one* always expresses genericity, and never occurs in episodic statements. Hence, Safir proposes that *one* involves two meaning components, an indexical component and a generic component, which interact to determine the referent of *one*, see (19).

- (19) English impersonal *one* contributes “the individual who is the hypothetical typical exemplar of a set salient to, and inclusive of, those that its indexical restriction requires, namely, the conversational participants in context *c*”.  
 (Safir 2004:11)

Based on (19), Safir proposes to treat *one* formally as a definite description.<sup>17</sup> Note, however, that even though actual conversational participants are used as models, *one* does not refer to a particular actual individual, but to a possibly non-existent individual

<sup>17</sup>Safir (2004) does not work out the formal proposal in detail. In the appendix, he sketches a formalization for the meaning of *one* which, however, does not correspond to the analysis of *one* formulated in (19). In the formalization *one* is given a standard semantics for third person pronouns (cf. Chapter 1), and the indexical component and the genericity component are added as presuppositions on possible values assigned by the variable assignment.

who possesses all of the contextually relevant properties. The only restriction on this combination of relevant properties is that it can in principle be found with an actual individual.

Safir also argues against indefinite accounts as proposed above. He claims that such an account cannot capture the data, specifically the constancy of reference across sentences. To model constancy of reference in an operator-variable account, the generic operator that binds all variables contributed by pronouns occurring in different sentences needs to be a discourse operator. However, if binding is determined by *c*-command, discourse operators of this kind cannot exist, and constancy of reference cannot be captured. He further argues that impersonally used *one* cannot be treated as contributing an unselectively bound variable as proposed by Heim (1988 [1982]) since impersonally used *one* always requires the presence of a generic operator. If *one* were to only contribute a variable, it could not be ensured that the variable would be bound by the generic operator.

Safir backs up his argumentation by showing that *one* cannot occur in existential-*there* sentences.<sup>18</sup> He gives the example in (20).

- (20) *She always knew that there would be one waiting in the wings.*  
(Safir 2004:6)

He argues that *one* in (20) can only be understood as the unrelated, existential *one*.

I agree with Safir (2004) that operator-variable accounts that analyze *one* as a Heimian indefinite (Condoravdi 1989, Moltmann 2006) need to explain why the variable contributed by the pronoun is never bound by existential closure. That is, why *one* always occurs in generic sentences or together with an adverb of quantification. This is an issue that needs to be addressed. However, I do not accept Safir's criticism that an operator-variable account cannot capture his perceived "constancy of reference". The generic operator has no influence on the set of individuals for which the generalization is stated. It only contributes quasi-universal quantification. The properties that determine the set of individuals depend on the descriptive content of the indefinite noun phrase that contributes the bound individual variable and on its modifiers (cf. Krifka et al. 1995; Drewery 1998; Greenberg 2007).<sup>19</sup>

The main problem with Safir's (2004) proposal, in my opinion, is the way in which

<sup>18</sup>The possibility to occur in the post-copula position in existential-*there* sentences is a traditional indefiniteness test. Malamud (2006) argues that existential-*there* sentences are not sensitive to (in)definiteness, but discourse function. I do not review her argument here. For a short discussion on existential-*there* sentences as a definiteness test see Section 2.4.

<sup>19</sup>In Drewery (1998) and Greenberg (2007), quasi-universal quantification is modelled in two parts. First, the set of individuals denoted by the indefinite noun phrase is restricted to the non-exceptional individuals in this set. And second, a universal quantifier quantifying over the restricted set is introduced. So in some sense, the generic operator has an effect on the set of individuals. However, the generic operator may never remove or add properties.

the referent of generic *one* is related to the participants in the discourse, though. By treating the set of conversational participants as the pool from which the referent of *one* is computed, the analysis runs into the following two problems.

First, it should be impossible for a speaker to use *one* twice in the same sentence with different referents. As shown in the previous section for co-ordinated clauses, though, two occurrences of *one* do not have to “co-refer”, see (21) (repeated from above).

(21) *One<sub>i</sub> has to clean one<sub>i</sub>'s flat, or else one<sub>i/j</sub> can't feel comfortable there.*

A possible answer that Safir could give to this observation is to say that the salient set containing the conversational participants can change with each occurrence of *one*. But this would mean that he cannot ensure constancy of reference across a discourse any more, which he needs to account for two participants contradicting each other with sentences containing generic *one*.

Second, as Safir himself notes, an exclusionary effect can be observed when a speaker states a generalization using *one* that does not apply to one or more discourse participants. This effect is not predicted by Safir's proposal since the typical individual is computed from a set that contains *all* discourse participants. If the average individual is computed from all participants, all participants should at least share some of the relevant properties assigned to the average individual, and the generalization should apply to them. Consequently, it should not be possible to state a sentence containing *one* that has an exclusionary effect with respect to a discourse participant.

A possible way around this conclusion is also given in Safir (2004). While discussing the exclusionary effect, Safir states that in these cases, the “contextual assumptions about the typical conversational participant” are not shared by all participants (Safir 2004:4). The speaker (intentionally or unintentionally) assumes different common properties shared by himself, his addressees, and other salient individuals, and therefore, his generalization fails to cover all participants. While this is a valid point, the use of speaker assumptions, or similarly speaker intentions, suggests a different analysis than the proposal Safir puts forth in the end, i.e. one where the participants and their actual properties do not play a central role.

In a similar vein to Safir (2004), Kratzer (1997) proposes to treat German *man* as a definite expression. She looks at data from the type of German dialect that allows for an impersonal, an existential, and a referential use of *man* (cf. Section 2.2.1). However, she uses a different classification for the data, and distinguishes only between inclusive and exclusive readings of *man*, which are determined relative to the speaker: In the exclusive reading, *man* denotes a group that excludes the speaker. In the inclusive reading, it denotes a group that either contains the speaker, or that the speaker sympathizes with.<sup>20</sup> This distinction has grammatical impact:

<sup>20</sup>The following correspondence between Kratzer's classification and the one proposed in Section

First, in the exclusive reading, the suppletive forms of *einer* are unavailable. For instance, example (22) can only be interpreted as involving referentially used *man* (= inclusive reading).

- (22) *Gestern hat man sich dann wieder einen 3D-Film angeschaut. Die Brille haben sie einem gestern ausnahmsweise schon an der Kasse gegeben.*  
 yesterday has one oneself then again a 3D-movie watched the glasses have they one yesterday as-an-exception already at the ticket-counter give  
 ‘Yesterday, we then again watched a 3D movie. As an exception, they already gave us the glasses at the ticket counter yesterday.’

Second, exclusive *man* cannot be restricted by *als*-phrases.<sup>21</sup>

- (23) \**Als Hüter des Gesetzes hat man mir erklärt, ich könne hier nicht wohnen.*  
 as guardian-of-the-law has one me explained I could here not live  
 Intended: ‘As guardians of the law, they explained to me that I couldn’t live here.’ (exclusive/existential)  
 (Kratzer 1997:4)

And third, exclusive *man* cannot co-refer with possessives.<sup>22</sup>

- (24) *Wenn man<sub>i</sub> seine<sub>i</sub> Hausaufgabe gemacht hatte, durfte man<sub>i</sub> spielen.*  
 when one one’s homework done had could one play  
 Intended: ‘When we had done our homework, we were allowed to play.’ (inclusive/referential)  
 (Kratzer 1997:5)
- (25) \**Wenn man<sub>i</sub> seine<sub>i</sub> Brille aufsetzte, kriegten wir Angst.*  
 when one one’s glasses put-on got we fear  
 Intended: ‘When they put on their glasses, we got frightened.’ (exclusive/existential)  
 (Kratzer 1997:5)

Working with a feature-based account of pronominal meaning, Kratzer concludes from these observations that German *man* is ambiguous between two feature specifications. Both the exclusive and inclusive interpretations are built up from regular  $\phi$ -features and three additional building blocks: MAN, IN, and EX. The latter are interpreted as

2.2.1 can be made: The existential use of *man* results in exclusive, and the indexical use in inclusive readings. The interpretation of the impersonal uses may fall in either category, but the default case seems to be an inclusive reading.

<sup>21</sup>Kratzer (1997) calls them “predicative NPs”.

<sup>22</sup>Cf. Cabredo-Hofherr (2008) for a discussion of the inner-sentential co-reference and binding behavior of the existential use of *man*.

in (26) with the “group of” and “anti-group of” predicates in the denotation of IN and EX being treated as primitive, atomic concepts.

- (26) a.  $[[\text{MAN}]^{g,w,c}] = \text{the speaker in context } c$   
 b.  $[[\text{IN}]^{g,w,c}(x)] = \text{the group of } x \text{ in world } w$   
 c.  $[[\text{EX}]^{g,w,c}(x)] = \text{the anti-group of } x \text{ in world } w$   
 (Kratzer 1997:6)

Regarding the treatment of  $\phi$ -features, Kratzer (1997) does not make any explicit assumptions. However, the  $\phi$ -features attributable to *man* do not seem to make a semantic contribution, but seem to be needed for the observed agreement patterns only.

Inclusive *man* is built up from the morphosyntactic features [3rd], [sg], [masc], and two building blocks IN, and MAN, see (27).

- (27) Inclusive *man* refers to the group of the speaker in context *c* in world *w*

Exclusive *man* is built up from [3rd], [sg], EX, and MAN, see (28).

- (28) Exclusive *man* refers to the anti-group of the speaker in context *c* in world *w*

Given this formalization, both inclusive and exclusive *man* are analyzed as definite descriptions that are undetermined with respect to semantic number. Kratzer supports this analysis with a definiteness test. She uses the German counterpart of English existential *there*-sentences, and contrasts *man* with existential indefinite pronouns, see (29)–(31).<sup>23</sup>

- (29) \**Es war man gekommen.*  
 it was one come  
 Intended: ‘They/we had come.’  
 (Kratzer 1997:7)

- (30) *Es war jemand gekommen.*  
 it was somebody come  
 ‘Somebody had come.’  
 (Kratzer 1997:7)

- (31) *Es war wer gekommen.*  
 it was somebody come  
 ‘Somebody had come.’  
 (Kratzer 1997:7)

<sup>23</sup>Egerland (2003) argues that the ungrammaticality of (29) is not a result of the definiteness of *man*, but follows from *man*’s status as a weak pronoun. Weak pronouns in general cannot occur in low positions in the syntactic structure.

The definite account proposed by Kratzer differs from Safir’s account in one central respect. In both accounts, the impersonal pronoun has a context dependent component which is used to determine the referent of the pronoun. However, Safir hardwires genericity into the meaning of *one* while Kratzer never explicitly discusses the generic use of *man*.

The central problematic point for Kratzer’s proposal is that the impersonal use of *man* cannot be modelled straightforwardly. Since Kratzer does not discuss the impersonal use, I assume that it is inclusive; although the following argument does not depend on this choice. Furthermore, I assume that genericity is modelled with a modal generic operator as proposed in Krifka et al. (1995), which can bind individual, situation, and world variables. Given these assumptions and Kratzer’s proposal for inclusive *man*, the only variable that can be bound by the generic operator is the world variable, see (27) above. Hence the only possibility to induce quasi-universal quantification over groups of individuals is by universal quantification over accessible worlds. For instance, the sentence in (32-a) comes out as (32-b).

- (32) a. *Man respektiert die Rechte anderer.*  
           one respects the rights others  
           ‘One respects the rights of others.’  
       b. Gen  $w'$  [respects-the-rights-of-others(the group of the speaker in  $c$ )( $w'$ )]

If *Gen* is interpreted as a universal quantifier over relevantly normal worlds (cf. Krifka et al. 1995), the formal analysis can be further elaborated as in (33).

- (33) In all relevantly normal worlds  $w'$ , the group of the speaker (in  $c$ ) in world  $w'$  respects the rights of others.

As mentioned above, Kratzer treats the “group of” predicate as an unanalyzed primitive predicate. But to judge the predictive power of the account, further assumptions about the individuals denoted by the predicate need to be made. Specifically, it has to be determined which plurality of individuals the description “the group of the speaker (in  $c$ ) in  $w'$ ” needs to refer to for the generic reading of *man* to be captured adequately.

One intuition about generic sentences, and thus sentences containing impersonal pronouns, is that they talk about typical or normal individuals. Hence, the “group of” predicate could depend on the speaker’s assumptions regarding normal or typical individuals (cf. Safir 2004): If the speaker counts himself among the normal individuals in the actual world, and wants to state that these people respect the rights of others, the group of the speaker in the actual world could be assumed to be the group of typical or normal individuals. This has to be true in all accessible worlds, though. The group of the speaker in the accessible worlds also needs to be the group of normal individuals with respect to the speaker’s assumptions in the actual world, but these

groups are not the same as the group of the speaker in the actual world. However, it is not enough to keep the group of the speaker constant for all accessible worlds since, in that case, the generic sentence would “only” express a property of a specific group. That is, the formalization would predict that *man* does not generalize over normal or typical individuals, but over an arbitrary group that the speaker belongs to, and *man* would essentially be indistinguishable from the first person plural pronoun *wir* (Engl. ‘we’) in generic sentences. Consider, however, the contrast for the examples in (34).

- (34) a. *In Deutschland telefoniert man täglich mit seinen Eltern.*  
 in Germany talks-on-the-phone one daily with one’s parents  
 ‘In Germany, one talks on the phone with one’s parents every day.’  
 b. *In Deutschland telefonieren wir täglich mit unseren Eltern.*  
 in Germany talk-on-the-phone we daily with our parents  
 ‘In Germany, we talk on the phone with our parents every day.’

The example in (34-a) expresses a rule for “normal individuals” regarding phone calls with one’s parents. In contrast, the example in (34-b) can only be read as a rule for a certain plurality containing the speaker.

Hence, it seems that the “group of” predicate needs to ensure that *man* does not behave like a first person plural pronoun in generic sentences. That is, for each accessible world  $w'$ , the “group of” predicate needs to pick the group of normal individuals in  $w'$ . This means, however, that part of the generic meaning of the impersonal use needs to be built into the meaning of the impersonal pronoun. This predicts that inclusive *man* always picks the group of normal individuals containing the speaker in  $c$  for a given world, independently of the impersonal use. This, in turn, makes false predictions for the existential and the referential uses, which are not restricted to statements about normal or typical individuals. For instance, example (35-a) states that someone, but not necessarily an “abnormal” or untypical individual (it is an exclusive use), stole the speaker’s bike. Similarly, (35-b) states that a plurality of individuals including the speaker, but not necessarily a plurality of normal or typical individuals (it is an inclusive use), played with the dog after doing their homework.

- (35) a. *Man hat gestern mein Rad geklaut.*  
 one has yesterday my bike stolen  
 ‘Someone stole my bike yesterday.’  
 b. *Gestern durfte man nach den Hausaufgaben mit dem Hund spielen.*  
 yesterday was-allowed-to one after the homework with the dog  
 play  
 ‘After doing our homework, we were allowed to play with the dog yesterday.’

One final remark has to be made about the observations that point toward a definite

analysis of impersonal pronouns that were mentioned at the beginning of this section (i.e. the parallels between the morphosyntactic behavior of first and second person pronouns and impersonal pronouns). As far as I can tell at this point, one can only conclude from these parallels that impersonal pronouns, like first and second person pronouns, are no true pro-forms. And even though it was shown in Section 1.2 that the impersonal uses of first and second person singular pronouns and impersonal pronouns are truth-conditionally equivalent, this equivalence does not extend to the other uses of these pronouns. To point out the obvious: first and second person singular pronouns do not have an existential use. So in sum—and also to avoid circularity in the subsequent argumentation—similarities in the morphosyntactic behavior of first and second person pronouns and impersonal pronouns do not constitute compelling evidence for an analysis of these pronouns as definite expressions.

The issue of (in)definiteness is taken up in Section 2.4 on a conceptual level. In the following section, parallels and differences between impersonal pronouns and existential indefinite pronouns are discussed in light of an analysis of impersonal pronouns as indefinite expressions.

### 2.2.3 Impersonal pronouns and existential indefinite pronouns

In this section, further evidence for or against an “indefinite account” for impersonal pronouns—specifically German *man*—is explored. I review two discussions from the literature that concern comparisons between impersonal pronouns and other indefinite expressions (Zifonun 2000; Cabredo-Hofherr 2008). The first comparison is between the existential use of *man* and the German indefinite pronoun *jemand* (Engl. ‘someone’), the second is between the impersonal use of *man* and indefinite noun phrases in generic sentences.

One central characteristic property of the existential use of *man* is its non-specificity of reference. This property has also been attributed to other pronouns in the class of indefinite pronouns, e.g. *jemand* (Engl. ‘someone’). One advantage of a direct comparison of *man* and *jemand* is that it might help to determine the plausibility of an indefinite account for *man* since the analysis of *jemand* as an indefinite expression is uncontroversial. However, Zifonun (2000) and Cabredo-Hofherr (2008) show that impersonal pronouns are different from existential indefinite pronouns<sup>24</sup> in at least three respects: (i) they have different scopal behavior, (ii) they differ regarding the availability of a generic reading, and (iii) they allow different pronominal anaphors.

Regarding the first point, existentially used *man* does not interact scopally with

<sup>24</sup>Zifonun (2000) talks about “Indefinitpronomen”, which are a subclass of “Impersonalpronomen”. Here the discrepancy between English and German terminology continues: “Indefinitpronomen” (lit. “indefinite pronouns”) are those indefinite pronouns that are traditionally analyzed as indefinite expressions, i.e. as involving existential quantification.

adverbs of quantification, negation, and coordination; it is invariably interpreted in the scope of these operators. In contrast, *jemand* shows the scope alternations that are usually found with quantified expressions, as well as the bias found in German for the surface scope order of multiple quantifying expressions, see (36) (the translation gives the preferred interpretation).

- (36) a. *Schon oft hat mir jemand gesagt, dass ...*  
 already often has me someone told that  
 ‘It happened often already that someone told me that ...’ (*often* >  $\exists$ )
- b. *Jemand hat mir schon oft gesagt, dass ...*  
 someone has me already often told that  
 ‘For someone it is the case that he already told me often that ...’ ( $\exists$  > *often*)  
 (Zifonun 2000:245)

In the first sentence of (36), *jemand* is naturally interpreted in the scope of *oft* (Engl. ‘often’). In the second sentence, the preferred scope order is reversed. In contrast, the change in surface order has no effect on the interpretation when *jemand* is replaced by *man*, see (37).

- (37) a. *Schon oft hat man mir gesagt, dass ...*  
 already often has me one told that  
 ‘It happened often already that someone told me that ...’ (*often* >  $\exists$ )
- b. *Man hat mir schon oft gesagt, dass ...*  
 one has me already often told that  
 ‘It happened often already that someone told me that ...’ (*often* >  $\exists$ )  
 (Zifonun 2000:245)

Both sentences in (37) have the preferred interpretation where *man* is interpreted in the scope of *oft* (Engl. ‘often’).

Similarly, the existential use of *man* always has low scope with respect to sentential negation (i.e. *nicht*), see (38).

- (38) *Man hat letzte Woche nicht bei uns eingebrochen.*  
 one has last week not at us broken-in  
 ‘No one broke into our place last week.’ ( $\neg$  >  $\exists$ )  
 (Zifonun 2000:246)

Note that the use of *jemand* with overt negation is marked because the alternative expression *niemand* (Engl. ‘no one’) is available. Nevertheless, it can be observed that *jemand* is naturally interpreted as scoping above sentential negation. The sentence in (39) shows the same surface order as example (38), but *jemand* has high scope (in accordance with the surface scope bias).

- (39) *Jemand hat letzte Woche nicht bei uns eingebrochen.*  
 someone has last week not at us broken-in  
 ‘Someone did not break into our place last week.’ (∃ > ¬)

*Man* and *jemand* also behave differently in coordinated clauses. Example (40) may be understood as saying that the person breaking into the speaker’s place was the one who took the spoons. In contrast, example (41) unambiguously states that different people did the breaking-in and the stealing (making the sentence somewhat implausible).

- (40) *Man hat bei mir eingebrochen und man hat dabei silberne Löffel geklaut.*  
 one has at me broken-in and one has in-the-process silver spoons  
 stolen  
 ‘Someone broke into my place and stole silver spoons in the process.’  
 (Zifonun 2000:245)
- (41) *Jemand hat bei mir eingebrochen und jemand hat dabei silberne Löffel geklaut.*  
 someone has at me broken-in and someone has in-the-process silver  
 spoons stolen  
 ‘Someone broke into my place, and someone stole silver spoons in the process.’  
 (Zifonun 2000:245)

The second major difference between *man* and *jemand* is the availability of a generic interpretation for *man*, but not for *jemand*. In Section 2.2.1, the impersonal use of impersonal pronouns was identified as their cross-linguistic common core, and based on its frequency in corpora, Zifonun (2000) argues quite convincingly that it is also the primary use of *man*. The existential indefinite pronoun *jemand*, in contrast, cannot be interpreted generically. It is interpreted existentially without exception, and even forces an episodic or habitual reading for sentences in which they occur. Compare (42) and (43).

- (42) *Man isst nicht mit den Fingern.*  
 one eats not with the fingers  
 ‘One doesn’t eat with one’s hands.’  
 (Cabredo-Hofherr 2008:39)
- (43) *Jemand isst nicht mit den Fingern.*  
 one eats not with the fingers  
 ‘Someone usually/ at the moment doesn’t eat with his hands.’  
 (Cabredo-Hofherr 2008:39)

Note, that while *jemand* and *man* seem to contribute the same content when they are in the antecedent of a conditional with generic flavor—cf. examples (44) and (45)—the

unavailability of a generic reading in non-conditional sentences is good evidence that *jemand* cannot be bound by a generic operator directly.

The third point in which *man* and *jemand* differ is the set of possible anaphoric elements. As discussed in Section 2.2.1, *man* only allows other occurrences of *man* as anaphors. The only anaphors that are possible for *jemand*, on the other hand, are third person pronouns. Compare (44) and (45).

(44) *Wenn man<sub>i</sub> sich erkältet, muss man<sub>i/j</sub>/ er<sub>\*i/j</sub> sich ausruhen.*  
 if one oneself get-a-cold, must one he oneself/himself rest  
 (Cabredo-Hofherr 2008:39)

(45) *Wenn sich jemand<sub>i</sub> erkältet, muss jemand<sub>\*i/j</sub>/ er<sub>i/j</sub> sich ausruhen.*  
 if himself someone get-a-cold, must someone he himself rest  
 (Cabredo-Hofherr 2008:39)

	variable scope	generic interpretation	anaphors
<i>man</i>	no	yes	only impersonal
<i>jemand</i>	yes	no	only 3rd person pronouns

Table 2.3: Results of the comparison between *man* and *jemand*

The differences between *man* and *jemand* again suggest that *man* behaves more like a personal pronoun in its co-reference and binding behavior than like a quantified expression. From this, Zifonun (2000) concludes that *man* should not be analyzed as an existential indefinite pronoun. She proposes two alternative routes: either (i) *man* belongs to the class of personal pronouns, or (ii) *man* receives a special status between indefinite pronouns and personal pronouns.

Cabredo-Hofherr (2008) takes up Zifonun’s discussion, and investigates whether the behavior of *man* is mirrored by its counterparts in other languages, e.g. French *on* and Yiddish *men*. She observes that the differences between impersonal pronouns and existential indefinite pronouns seem to be cross-linguistically stable. Based on this observation, she argues for a special semantic status for impersonal pronouns, i.e. König and Mauner’s (1999) analysis of *man* as an “a-definite” (cf. Footnote 12 in Section 2.2.2).

So far, the data discussed in this section suggests that impersonal pronouns are not indefinite expressions. Should the discussion of the semantic accounts and its conclusion in the previous section be rethought then? Perhaps impersonal pronouns are indeed definite expressions?

Before the results of the previous section are questioned, the core impersonal use of impersonal pronouns should be compared to the behavior of other noun phrases in generic sentences.

Three types of noun phrases receive a “special” interpretation in generic sentences (Krifka et al. 1995).<sup>25</sup> Bare plural noun phrases are either interpreted as kind-denoting or as quasi-universally quantified:

- (46) a. *Dodos are extinct.* (kind-denoting)  
 b. *Dogs have four legs.* (quasi-universally quantified)

Indefinite singular noun phrases only allow for a quasi-universally quantified reading, and definite noun phrases only for a kind reading:

- (47) a. *A dog has four legs.* (quasi-universally quantified)  
 b. *The dodo is extinct.* (kind-denoting)

Zifonun (2000) observes that impersonally used *man* only occurs quasi-universally quantified, i.e. even though impersonal pronouns in their impersonal use are constrained to animate individuals (cf. Section 1.2.2), they can never denote the kind “animate individual”. Furthermore, *man* cannot combine with kind predicates, see (48).

- (48) #/\**Man ist als Dodo ausgestorben.*  
 one is as dodo extinct  
 Unavailable: ‘Dodos are extinct.’

Regardless of Zifonun’s observation, the impersonal use of *man* and its behavior are still compatible with an underlying semantics parallel to that of bare plurals, in addition to that of indefinite singular noun phrases.

- (49) *Man hat als Hund vier Beine.*  
 one has as dog four legs  
 Available: ‘Dogs have four legs.’ / ‘A dog has four legs.’

The unavailability of a kind reading only excludes the possibility that impersonally used *man* is interpreted either like a bare plural (in one use) or like a definite noun phrase. However, some researchers take the differences between impersonal pronouns and existential indefinite pronouns and the unavailability of a kind reading as evidence against analyzing impersonal pronouns as indefinite expressions (cf. Zifonun 2000; Cabredo-Hofherr 2008). I believe that this conclusion is not warranted. I agree with one point only: impersonal pronouns should not be analyzed exactly like existential indefinite pronouns or indefinite noun phrases. The comparisons reviewed above provide ample evidence against a common semantic analysis. Still, the evidence is not enough to discard an analysis of *man* as an indefinite expression of some sort. This is supported by at least three reasons.

First, the two definite analyses proposed in Kratzer (1997) and Safir (2004) run into

<sup>25</sup>The following discussion ignores taxonomic kind-readings found with singular indefinite noun phrases, bare plurals, and definite plural noun phrases. Cf. Krifka et al. (1995).

serious conceptual problems (cf. Section 2.2.2). Second, the arguments presented in Kratzer (1997) and Safir (2004) to treat impersonal pronouns as definite expressions are not uncontroversial. In Section 2.4, I address the problematic nature of definiteness tests, and the general categories of definiteness and indefiniteness. And third, Zifonun (2000) and Cabredo-Hofherr (2008) both in fact argue for a special status of impersonal pronouns with respect to personal pronouns and indefinite pronouns. If this is on the right track, it cannot be concluded that impersonal pronouns are not indefinite expressions, after all.<sup>26</sup>

To complete the three-way comparison in this section: existential indefinite pronouns in fact also differ from indefinite noun phrases regarding the availability of quantificational variability effects with adverbs of quantification, and regarding the availability of a generic interpretation. Quantificational variability effects are simply impossible for the existential indefinite pronoun *jemand*. Compare (50-a) and (50-b).

- (50) a. **Ein Bauer** wurde damals meist nicht älter als 60.  
 a farmer got back-then usually not older than 60  
 Available: ‘Back then, most farmers did not get older than 60.’
- b. **Jemand** wurde damals meist nicht älter als 60.  
 someone got back-then usually not older than 60  
 Available: ‘Back then, someone usually did not get older than 60.’  
 Unavailable: ‘Back then, most people did not get older than 60.’

It is perhaps polemic to ask at this point—given these observations—which of the two expressions, existential indefinite pronouns or indefinite noun phrases, should lose their status as an indefinite expression. What this is supposed to show, however, is that the class of indefinite expressions may not be semantically uniform.

Before I return to the question of definiteness and indefiniteness in Section 2.4, though, I first review two previous formal analyses for impersonally interpreted personal pronouns in Section 2.3.

## 2.3 Impersonally interpreted personal pronouns

### 2.3.1 The relevant semantic properties and their consequences

The aim of this section is to set the stage for the unified analysis for *ich* and *du* proposed in Section 2.5.3. In this first subsection, I summarize the empirical observations made for English and German impersonally used personal pronouns from Chapter 1. At some points, new observations regarding the link between the impersonal readings and impersonal pronouns are added. In the following subsections, I review the formal proposals for the semantics of impersonally used second person singular pronouns put

<sup>26</sup>Cf. Malamud (2006:117) for a similar conclusion.

forth in Malamud (2006, 2007) and Alonso-Ovalle (2000, 2002), and identify their respective shortcomings.

The relevant characteristics of *ich* and *du/you*—in all of their uses—were discussed at length in Chapter 1. Since the following review lacks empirical depth, I ask the interested reader to consult the detailed discussions in Sections 1.2–1.5.

The central semantic characteristic of the impersonal uses of personal and impersonal pronouns in German and English is their truth-conditional equivalence. This is supported by the fact that impersonal uses may be substituted for each other *salva veritate*. Crucially, however, this truth-conditional equivalence only holds in the impersonal uses. First and second person singular pronouns vary between an impersonal and a referential use, but do not have an existential use corresponding to the existential use found with some impersonal pronouns.<sup>27</sup> In contrast, impersonal pronouns cross-linguistically rarely have a referential use.

Two considerations add further support to the conclusion that impersonally interpreted personal pronouns and impersonal pronouns are truth-conditionally equivalent. First, as shown in Section 1.2.2, it is possible to switch between different pronominal forms in the impersonal use. And second, similar co-reference and binding behavior was observed for impersonally used personal and impersonal pronouns in Section 2.2.<sup>28</sup> Table 2.4 summarizes these parallels.<sup>29</sup>

	co-reference	reflexives	possessives
first singular pronoun	1st sg	1st sg	1st sg
second singular pronoun	2nd sg	2nd sg	2nd sg
impersonal pronoun	impersonal	<i>man</i> : 3rd sg <i>one</i> : oneself	<i>man</i> : 3rd sg <i>one</i> : one

Table 2.4: Comparison: morphosyntactic make-up of anaphoric material

The second central observation was that on the surface, impersonally interpreted personal pronouns are morphosyntactically indistinguishable from their referentially used variants. This means that examples illustrating the impersonal uses of personal pronouns usually have a reading in which the pronouns are used referentially. However, there are three striking differences between the impersonal use and the referential use of personal pronouns: (i) the context-independent behavior of the impersonal uses in indirect speech, (ii) the possibility to mix pronominal forms in the impersonal use, and

<sup>27</sup>Vague uses in the sense of Kitagawa and Lehrer (1990)—if they are indeed indefinite in nature—are restricted to plural personal pronouns.

<sup>28</sup>Results from the syntax-semantic interface literature on personal pronouns suggest that the morphosyntactic make up and the agreement, reference, and binding behavior are tightly connected with the meaning of personal pronouns. Cf. Kratzer (2009).

<sup>29</sup>For the split in the row for impersonal pronouns see Section 2.2.1.

(iii) the availability of quantificational variability effects, which further connects the impersonal uses of personal pronouns with impersonal pronouns (cf. Section 2.2).

Concerning syntactic, semantic, and pragmatic restrictions, the impersonal use of impersonal pronouns is less restricted than the impersonal use of first and second person singular pronouns. For German, a hierarchy regarding restrictiveness may be given: *ich* > *du* > *man*. In non-episodic sentences, *man* and its suppletive forms can be used generically without any syntactic, semantic, or pragmatic restrictions. In contrast, the impersonal uses of *ich* and *du* are sensitive with respect to various co-occurring lexical material (cf. Section 1.3). For all impersonal uses, however, it is a necessary condition that the sentence expresses a non-episodic statement. Some co-occurring material may block an impersonal interpretation by suggesting an episodic interpretation for the sentence.

The main difference between the impersonal uses can be found on the pragmatic level. Impersonally used personal and impersonal pronouns differ from indefinite noun phrases in generic sentences and from each other in their pragmatic effects. The impersonal use of second person singular pronouns aims to build closeness between the speaker and the addressee by inviting the addressee to empathize with the individuals generalized over. In contrast, the impersonal use of German first person singular *ich* is used by the speaker to distance herself from other individuals in the context. It communicates that somebody other than the speaker may not share the speaker's opinion regarding the validity of the generalization that is expressed. With respect to these participant-oriented effects, the impersonal uses of *man* and *one* are neutral.

In sum, semantic accounts need to capture at least the following central properties of the different impersonal uses:

- their truth-conditional equivalence
- the restriction to generic sentences
- the availability of quantificational variability effects

Note that it is unclear at this point how to account for the pragmatic effects of the impersonal uses—they may or may not need to be captured by a semantic account (but cf. the discussion in Chapter 4).

Given the many similarities between impersonally used personal and impersonal pronouns, it seems promising to adopt a semantic account which adequately captures the meaning of impersonal pronouns. Of the two analyses that will be discussed in the following subsections—Malamud (2006, 2007) for English *you* and in Alonso-Ovalle (2000, 2002) for Spanish second person singular—Malamud takes this observation as her starting point, and proposes a unified indefinite account. Notably, Alonso-Ovalle (2000, 2002) agrees with Malamud that a unified account should be given for all of the uses of personal pronouns. In contrast to Malamud, however, he argues against the

assumption that impersonally used personal pronouns should be analyzed as indefinite expressions, specifically as Heimian indefinites (cf. Heim 1988 [1982]). He presents the following five—already familiar—arguments.

1. Not all pronouns that have an impersonal use also have an existential use. This is predicted to be the case by an analysis of personal (and impersonal) pronouns as Heimian indefinites since existential closure should apply in those cases where no other operator binds the variable.
2. Quantificational variability effects do not arise in all cases in which a pronoun with an impersonal use co-occurs with an adverb of quantification.
3. Most of the time an impersonal interpretation is dispreferred if no explicit restrictive expression, like a spatio-temporal adverbial, co-occurs in the sentence.
4. In the existential uses, impersonally used impersonal pronouns do not behave like ordinary indefinites since they never take wide scope.
5. All pronouns that have an impersonal use do not show the regular anaphoric patterns found with ordinary indefinites.

All of Alonso-Ovalle's arguments are valid observations on the behavior of impersonal uses found with both impersonal and personal pronouns, but as argued in Section 2.2 for impersonal pronouns, these observations do not provide conclusive evidence against an analysis of the *impersonal uses* as Heimian indefinites. They might become problematic, however, as soon as a unified account for all of the uses of personal pronouns is aimed at. The resulting problems are again connected to considerations regarding (in)definiteness (cf. Section 2.4).

If a *non-unified* account for the referential uses, on the one hand, and the impersonal uses, on the other hand, turns out to be the only option, what is the connection between the two uses? Malamud (2006) argues that the referential use and the impersonal use of English *you* are not the result of lexical ambiguity. Her first argument is that the impersonal use found with second person *you* is not a lexical accident exclusively found in English. For many among the European languages, an impersonal use for second person singular pronouns is available: an impersonal use is attested for e.g. German, English, Dutch, Italian, French, Spanish, and Swedish (cf. Alonso-Ovalle 2000, Bennis 2004, Chierchia 1995b, Malamud 2006, Egerland 2003, Cabredo-Hofherr 2004). Malamud's second argument is that the empathy tracking effects observed for the impersonal uses point toward a connection between the referential use and the impersonal use. If the two uses were associated with distinct lexical items, this connection would be unexpected. And lastly, as Alonso-Ovalle observed, as well, personal pronouns that have an impersonal use do not automatically also have an existential use. If the impersonal use were expressed by a distinct lexical item that is similar to an impersonal pronoun,

an existential interpretation could be expected to arise in episodic sentences—as is the case e.g. for German *man*.

While Malamud’s last argument is not particularly strong for English given that *one* also does not have an existential use, the systematic availability of impersonal uses for second person singular and sometimes also first person singular pronouns is, in my opinion, a compelling argument to view the impersonal use and the referential use as two distinct uses of the same lexical item. That is, the different uses are related semantic contributions of the same, possibly polysemous personal pronoun. Moreover, if the availability of an impersonal use for the second person singular personal pronoun were a lexical accident in all of the listed languages, different semantic and pragmatic behavior across languages should be observable. But, at least for German and English, this is not the case.

As mentioned above, [Alonso-Ovalle \(2000, 2002\)](#) and [Malamud \(2006, 2007\)](#) argue for the even stronger claim that the referential use and the impersonal use arise from the *same* semantic contribution, though. That is, their aim is to give a unified account which captures both uses depending on their different sentential contexts. Their accounts are reviewed in the following two subsections.

### 2.3.2 Malamud (2006, 2007)

[Malamud \(2006, 2007\)](#) proposes a unified account which aims to capture both the impersonal and the referential use of English *you* by analyzing it as a special sort of indefinite expression: the empathy tracking effects observable for the impersonal use of *you* are taken as a reflection of the common semantic core of both uses—a relation between the addressee and potentially other individuals that the addressee empathizes with.<sup>30</sup> To model this relation, Malamud proposes two primitive notions from which an individual is made-up: its *self* and its *persona*. The self of an individual can be seen as its body, i.e. its physical form; the persona of an individual represents its mind or soul which is connected to an individual’s self-awareness and point of view.<sup>31</sup>

<sup>30</sup>As introduced in Section 1.2, [Malamud \(2006, 2007\)](#) argues that the empathy tracking effects observable for the impersonal use of *you* signal that the speaker invites the addressee to empathize with the set of individuals generalized over. In other words, the addressee is invited to share the perspective of these individuals.

<sup>31</sup>[Malamud \(2006\)](#), in contrast to her proposal in her 2007 draft, links the partition of an individual into its self and its persona to essential properties of Lewisian counterparts (cf. [Lewis 1971](#)). The idea is that all counterparts share the same bundle of essential properties across worlds, which may be analyzed as these individuals’ self. The persona are those properties of specific individuals that are not part of the self. In [Malamud \(2007\)](#), she abandons this link because of the possibility to state identity counterfactuals like the following.

- (i) *If I were a stone, I would not be able to feel any pain.*

The analysis in [Malamud \(2006\)](#) predicts that the stones picked in the accessible worlds share essential properties with the speaker, which is, of course, undesirable.

Malamud argues that the notions of self and persona are needed to account for identity counterfactuals and dream reports, and are, therefore, independently motivated. She analyzes identity counterfactuals, as well as dream reports, in terms of “pretense”. In both cases, the speaker pretends that an individual’s persona inhabits the self of another individual. Consider examples (51) and (52).

- (51) *If you were Mary, you wouldn’t be dating this horrid guy she’s with!*  
 = If the addressee’s self had Mary’s persona, this individual wouldn’t be dating this guy.  
 (adapted from Malamud 2007:23)
- (52) *I dreamed that I was Brigitte Bardot and I was walking down the street.*  
 John’s dream: Brigitte’s body with John’s mind walking down the street.<sup>32</sup>  
 (Malamud 2007:25)

The idea of a *persona* is defined in (53).

- (53) *Persona y of x in s* is an individual existing in the situation *s*, which has a subset of the properties of individual *y* that does not include *y*’s point of view/mind/soul, but includes the point of view/mind/soul of individual *x*.  
 (taken from Malamud 2007:25 with minor omissions)

As defined in (52), the notion of a *persona* does not fit with Malamud’s informal assumptions about the status of an individual’s persona and self reported above. In her analysis of identity counterfactuals and dream reports, she suggests that the persona and the self are proper subparts of individuals that do not count as individuals themselves, while in (52), the persona is a full-fledged individual. Therefore, I assume that the definition in (53) has to be understood as in (54).

- (54) The *persona y of x in s* is related to the individual *x* in the following way: For *x* and *y* and a situation *s*, there is an individual *z* in *s* such that *y* consists of *z*’s physical form and *x*’s point of view in *s*.

Note that in both (52) and (54), a persona seems to be a combination of a physical form and a point of view of two possibility distinct individuals.

For her formal analysis, Malamud introduces *persona* as a primitive, intensional relation between two individuals, see (55).

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<sup>32</sup>In Malamud’s (2007) original example, she writes *John’s self* instead of *John’s mind*. Given the division of individuals introduced above, replacing *self* with *mind* seems to be what was intended. The same switch between *mind* and *self* happens in the original definition of the “persona”-relation given in (53), where it is also amended.

- (55)  $\text{persona}(y)(x)(s) = 1$  iff  $y$  is an entity as defined in (53)  
 (Malamud 2007:25 with minor changes)

Based on the *persona* relation in (55), Malamud (2006, 2007) proposes the following account, which aims to capture the impersonal and referential uses of *you*.

- (56)  $\llbracket \text{you} \rrbracket^{g,w,c} = \lambda s. \lambda P. \exists y [\text{persona}(y)(\text{addressee}(c))(s) \ \& \ P(y)(s)]$

In (56), *you* is analyzed as an existential generalized quantifier which takes a property  $P$  and a situation  $s$  as arguments. The *persona*-relation and the property  $P$  are applied to a variable  $y$  which is existentially bound. Given the amended definition of the *persona* relation in (54), the variable  $y$  represents the individual in the situation  $s$  that has the point of view of the addressee and the physical form of some individual  $z$ .

How are the impersonal and referential uses of *you* captured in this account? Surprisingly in neither of her works, Malamud formalizes ordinary generic sentences containing impersonal uses of *you*. Only formal analyses for sentences containing referentially used *you*, as in (57), and sentences showing quantificational variability effects between *you* and some adverb of quantification, as in (58), are provided.

- (57) a. *You burned a house.*  
 b.  $\lambda s_0. \exists y \exists z [\text{house}(z)(s_0) \ \& \ \text{persona}(y)(\text{addressee}(c))(s_0) \ \& \ \text{burned}(y)(z)(s_0)]$   
 (adapted from Malamud 2007:26)

- (58) a. *In those days, you usually/rarely lived to be 60.*  
 b.  $\lambda s_0. \text{Most/Few } s$   
 $(\text{in-those-days}(s) \ \& \ s \in \text{Min}(\lambda s'. \exists y [\text{persona}(y)(\text{addressee}(c))(s')]))$   
 $(\forall s'' [s < s'' \rightarrow \text{lived-to-60}(\iota y [\text{persona}(y)(\text{addressee}(c))(s])](s'')])$   
 (adapted from Malamud 2007:26)

- c. *Paraphrase:* Most situations that are situated in those days and are minimal with respect to the existence of an individual with the addressee's point of view are such that in all extensions of this minimal situation, the individual with the addressee's point of view lived to be 60.<sup>33</sup>

In contrast to Lewis (1975), Heim (1988 [1982]), and Chierchia (1995b), Malamud assumes that quantificational variability effects arise from quantification over situations only. That is, quantification over individuals arises indirectly by quantification over situations containing only one relevant individual (cf. von Stechow 2004/1995).<sup>34</sup>

<sup>33</sup>This is not the paraphrase given in Malamud (2007), which does not make the connection to quantification over situations transparent. Also note that  $s_0$  is vacuously bound in Malamud's original proposal.

<sup>34</sup>Adverbs of quantification are modelled in situation semantics as quantifying over "minimal situations" (cf. von Stechow 2004/1995). Minimal situations are defined as situations that contain only those individuals and circumstances as required by the quantification expressed in the sentence.

The biggest problems for the account proposed in Malamud (2006, 2007) are caused by the *persona*-relation. Even though the split of an individual into its self and its persona was motivated by the empathy tracking data, which suggests a connection between the referential and the impersonal use, the *persona*-relation makes undesirable predictions for both the impersonal and the referential uses.

Since the relation restricts the domain of the existentially quantified variable, it is predicted that a generalization expressed by a sentence with impersonal *you* is only stated for those individuals that share the addressee's point of view, mind, or soul. The generalizations found in the data, however, apply to people sharing certain properties in general, irrespective of the addressee's point of view. Consider the example in (59).

(59) *You have to respect the rights of others.*

If this generalization were only to apply to individuals that share the addressee's mindset, the speaker could explicitly exclude herself from the generalization by stating that she does not share the addressee's point of view. A continuation of (59) along these lines, however, results in pragmatic oddness, see (60).

(60) *You have to respect the rights of others. #I don't have to, though, since I don't share your point of view.*

The problem becomes even more pronounced if the generalization only applies to a restricted class of individuals, as in (61).

(61) *As a farmer, you have to milk your cows.*

Malamud's account predicts that the utterance in (61) expresses a generalization for those farmers that share the addressee's mindset. This is again not general enough since intuitively (61) applies to farmers in general—again irrespective of the addressee's point of view.

Two further counter-intuitive predictions for the referential use follow from Malamud's account. Malamud assumes that the referential interpretation arises whenever the situation variable is not bound by either a generic operator or an adverb of quantification. This means that the referential uses are treated as last resort readings for *you* even though the referential use of *you* is arguably its default use. The second prediction is that in negated sentences, all components of the semantic contribution of *you* are in the scope of sentential negation. So, for instance, (62) asserts something about the entire set of individuals, even though intuitively only information about the addressee in *c* is given.

(62) *You don't look good at the moment.*

Consider the formalization in (63-a).

- (63) a.  $\neg\exists y[\text{persona}(y)(\text{addressee}(c))(s) \ \& \ P(y)(s)] \Leftrightarrow$   
 $\forall y[\neg\text{persona}(y)(\text{addressee}(c))(s) \vee \neg P(y)(s)]$   
 b. *Paraphrase:* All individuals  $y$  are such that  $y$  does not stand in the *persona* relation to the addressee or  $y$  is not  $P$ .

Since the *persona*-relation holds for all individuals that share the addressee’s point of view, (63-a) predicts that all people that share the addressee’s mindset, are  $P$ , i.e. sharing the addressee’s mindset determines being  $P$ . Hence, (62) should only be true if all individuals that stand in the *persona*-relation with the addressee do not look good at the time of utterance. To mitigate this problem, Malamud argues that usually, the *persona*-relation is the identity relation: the only person to whom the addressee stands in this relation is himself. How this can be ensured, though—apart from stipulating that the *persona*-relation is only different from the identity relation when an adverb of quantification or the generic operator is involved—is unclear to me.

### 2.3.3 Alonso-Ovalle (2000, 2002)

Alonso-Ovalle (2000, 2002) proposes a unified account which aims to capture the impersonal and the referential uses of the Spanish null pronoun, *pro*, that triggers second person singular agreement on the verb.<sup>35,36</sup> The central idea of both proposals is that *pro* expresses “non-rigid indexicality”, which is modelled by letting *pro* introduce a context-dependent functional variable. The two proposals, however, differ with respect to the type of functional variable contributed by *pro*.

Alonso-Ovalle (2000) analyzes *pro* as a free variable ranging over a specific set of individual concepts; hence, the proposal can in principle be classified as a “definite account”. Consider (64).

- (64)  $\llbracket \text{pro} \rrbracket^{g,s} = g(f)(s)$   
 where  $f$  is a free variable ranging over  $\{f' \in D_{\langle s,e \rangle} : \forall s[f'(s) \neq \text{speaker}(s_0)]\}$   
 (adapted slightly from Alonso-Ovalle 2000:12)

The value assigned to the functional variable by the variable assignment  $g$  is determined via contextual salience, i.e. salience in the utterance situation  $s_0$ . Note that  $s_0$  plays the same role as the Kaplanian context parameter and the world parameter of the interpretation function.<sup>37</sup>

<sup>35</sup>The numeral in *pro* denotes the agreement triggered by the silent pronoun.

<sup>36</sup>Alonso-Ovalle also contrasts *pro* with its overt counterpart, the second person singular pronoun *tú*, which has only a referential use. Since Spanish is a pro-drop language, this contrast between *pro* and *tú* is expected. As discussed in Chapter 1, Gruber (2011) observes that impersonal uses of personal pronouns in languages with pronominal forms of varying morphophonological strength, are typically only available for the morphologically weakest variant.

<sup>37</sup>Alonso-Ovalle (2000, 2002) works in situation semantics as proposed in Kratzer (1989).

Given the proposal in (64), the referential and impersonal uses of *pro2* arise as follows. In the referential use, *pro2* is interpreted with respect to the utterance situation  $s_0$ . In this case, the variable assignment  $g$  picks out the “addressee”-concept because it is the most salient concept in the utterance situation. Since impersonally used *pro2* only occurs in generic sentences, the value of  $f$  is determined relative to the most normal situations quantified over by the generic operator, and for most normal situations, Alonso-Ovalle argues, concepts other than the “addressee”-concept are higher in the salience ranking. Hence, other individuals are considered.<sup>38</sup> Example (65) illustrates the formalization for generic sentences containing impersonally used *pro2*.

- (65) a. *En ese departamento trabajas como un esclavo.*  
 In that department work.2s like a slave  
 b.  $\text{Gen}(\text{in-that-department}(s) \ \& \ \text{proto}(s))(\text{work-like-a-slave}(\text{pro2})(s))$   
 (Alonso-Ovalle 2000:13)

Note that the predicate *proto* in (65-b) is true for a situation iff it is most normal or prototypical situation with respect to the other material in the restrictor of *Gen*.

Since Alonso-Ovalle treats the generic operator as an adverb of quantification, *pro2* returns one unique individual per situation. Hence as in Malamud’s proposal discussed in Section 2.3.2, the perceived quasi-universal quantification over individuals is modeled by universal quantification over situations, specifically most normal situations that contain possibly different unique individuals.

There are two immediate problems with this proposal. The first problem arises because the Kaplanian context parameter and the world parameter are subsumed under one situation parameter. Since *pro2* does not rigidly depend on the utterance situation  $s_0$ , the formalization in (64) cannot capture the referential use of *pro2* in embedded clauses. Whenever the situation parameter is bound by a higher operator, situations other than  $s_0$  are considered, for which the “addressee”-concept may return individuals other than the addressee in  $s_0$ . As a consequence, referential interpretations of *pro2* should not be possible in non-episodic sentences, at all. The second problem is that the value of the functional variable  $f$  is fixed once it is assigned contextually. For the impersonal use, it can therefore not be ensured that  $f$  returns an individual for every situation that is quantified over generically, unless the concept refers to the situation, e.g. “the typical individual in this situation”. It seems unclear to me whether concepts of this kind are particularly salient with respect to most normal situations.

In contrast to the proposal in Alonso-Ovalle (2000), Alonso-Ovalle (2002) proposes that *pro2* contributes functions from sets of individuals to individuals, reminiscent of

<sup>38</sup>Alonso-Ovalle (2000) does not explicitly work out how the contextual salience ranking is determined for his account.

choice functions; hence this proposal can be classified as an “indefinite account”. The idea of “non-rigid indexicality” is, however, retained from his previous account.

With respect to the overall formal framework, Alonso-Ovalle assumes that the interpretation function takes two situation parameters, a reference situation  $s/r$  and an index  $s$ .<sup>39</sup> In episodic sentences,  $s/r$  is the situation of utterance  $s_0$ ; in generic sentences,  $s/r$  varies with respect to the most normal situations quantified over by the generic operator.

The central idea behind the second account is that *pro2* contributes a context dependent functional variable  $\mathbb{F}$ . The possible values of  $\mathbb{F}$  are functions from sets of individuals to individuals assigned to  $\mathbb{F}$  by the variable assignment  $g$ . Furthermore, a partial function  $\mathfrak{R}$  from situations to sets of individuals is introduced that retrieves all individuals in a given situation. For the utterance situation, it is stipulated that  $\mathfrak{R}$  always returns the set that contains only the speaker and the addressee, i.e.  $\mathfrak{R}(s_0) = \{\text{speaker}(s_0), \text{addressee}(s_0)\}$ .<sup>40</sup> Example (66) gives the final formalization of *pro2* proposed in Alonso-Ovalle (2002).

$$(66) \quad \llbracket \textit{pro2} \rrbracket^{s/r, s, g} = [g(\mathbb{F})](\mathfrak{R}(s/r) - \{\text{speaker}(s/r)\})$$

where  $\mathbb{F}$  ranges over the set of functions of the form  $f : \wp(D_e) \rightarrow D_e$   
(adapted with minor changes from Alonso-Ovalle 2002:6)

The silent pronoun *pro2* contributes a function that takes a set of individuals in the reference situation that explicitly excludes the speaker as its argument, and returns some individual. Unfortunately, Alonso-Ovalle is not explicit about the possible values for  $\mathbb{F}$ . Based on his discussion of the referential and impersonal uses of *pro2*, I suspect that the contextually assigned value for  $\mathbb{F}$  is a function that returns a member of its input set—similar to traditional choice functions. Without a restriction on the values of  $\mathbb{F}$  along these lines, a constant function  $f : D_{\langle e, t \rangle} \rightarrow D_e$  could be assigned to  $\mathbb{F}$  that always returns the speaker of  $s/r$  even though the speaker of  $s/r$  was explicitly excluded from the input set.

If a restriction to choice functions is adopted for  $\mathbb{F}$ , the meaning of *pro2* can be characterized as follows. If the situation of utterance  $s_0$  is picked as the reference situation, i.e. in episodic sentences,  $\mathfrak{R}(s_0) - \{\text{speaker}(s_0)\} = \{\text{addressee}(s_0)\}$ , and since  $\{\text{addressee}(s_0)\}$  is a singleton set,  $\mathbb{F}$  necessarily returns the single member of this set: the addressee in  $s_0$ . Hence, in episodic statements, the referent of *pro2* comes out as the addressee of the utterance. In non-episodic sentences, the generic operator quantifies over relevantly prototypical situations, which are also the arguments of  $\mathfrak{R}$  and *speaker*(.). Since for every prototypical situation, a different set of individuals is

<sup>39</sup>The term “index” is used in the sense of Lewis (1986), cf. Chapter 3.

<sup>40</sup>Alonso-Ovalle defines  $\mathfrak{R}(s_0)$  as the set  $\{c_S, c_A\}$ , i.e. the set containing the Kaplanian speaker and addressee. Since he does not use an explicit context parameter  $c$ , I adapted his definitions so that they consistently use situations.

determined as the argument for  $\mathbb{F}$ ,  $\mathbb{F}$  returns a different individual in each prototypical situation.

The account again suffers from various problems. One general problem shared by the previous account is that in non-episodic sentences, a referential use of *pro* should not be available, at all. This is again a consequence of Alonso-Ovalle’s assumptions regarding the meaning of the generic operator and the resulting variation across reference situations. Furthermore, since the proposal in (66) requires that the speaker of any given reference situation is excluded from the set of individuals returned by  $\mathfrak{R}$ , it has to be implicitly assumed that for each arbitrary situation a speaker can be determined. It is, however, unclear to me how this can be ensured.

## 2.4 Interlude – the (in)definiteness problem

### 2.4.1 The problem: Conflicting requirements

In the literature on the semantics of impersonal pronouns and on the impersonal readings of personal pronouns, a central issue is whether these pronouns should be analyzed as definite or as indefinite expressions.

There are two sides to this problem, a conceptual side and a formal side. The conceptual side involves considerations regarding the behavior of these expressions: Do (im)personal pronouns show similar syntactic and semantic characteristics to definite descriptions, indefinite descriptions, or to other (in)definite nominal expressions?<sup>41</sup> The formal side concerns the choice of formal analysis: Is there a formal analysis of other nominal expressions, which can be adopted, possibly adapted, and which yields the observed behavior of (im)personal pronouns?

The aim of this section is to shed light on the conceptual and formal aspects that need to be considered when designing a unified analysis for personal and impersonal pronouns in all of their uses. I call the challenge of meeting all of the opposing requirements introduced by the different uses of personal and impersonal pronouns the “(in)definiteness problem”. The rest of this section is used to introduce all of the conflicting requirements that form the (in)definiteness problem. In the following two subsections I then discuss the conceptual question of definiteness and indefiniteness of nominal expressions in episodic and generic sentences, and some recent work on quantificational variability effects.

Let us now turn to the list of conflicting requirements that make up the (in)definiteness problem. As shown in Chapter 1 and Section 2.2, impersonal and personal pronouns have a variety of uses. Impersonal pronouns may have an impersonal use, an existential use, and a referential use; similarly, some first and second person pronouns

<sup>41</sup>I use the term nominal expression to cover all syntactic constituents of the categories NP and DP.

have a referential and an impersonal use. Both types of pronouns also have referentially dependent bound and E-type uses.

One central result of the data discussion so far was that there are good reasons to assume that the impersonal use of impersonal pronouns is truth-conditionally equivalent to the impersonal use of personal pronouns, i.e. in their impersonal uses, the pronouns make the same semantic contribution. In the literature on impersonally used personal pronouns, this observation has been taken as a promising starting point for a unified account of personal pronouns in all of their uses (cf. [Malamud 2006, 2007](#)).

If the entire spectrum of readings—not just the impersonal uses—is considered, the following picture arises: Personal and impersonal pronouns are only truth-conditionally equivalent in *one* of their uses, the respective impersonal use. In their other, predominant uses, personal pronouns are preferably analyzed as definite expressions (cf. [Elbourne 2005, Kratzer 2009](#)). Impersonal pronouns, in contrast, have been predominantly analyzed as indefinite expressions (cf. [Condoravdi 1989; Malamud 2006, 2007; Alonso-Ovalle 2000, 2002; Chierchia 1995b](#)). At this point a clear dilemma becomes apparent. Either personal pronouns stop being definite expressions in their impersonal uses, or impersonal pronouns in their dominant impersonal use are not indefinite, but definite expressions.

Another complicating issue is raised by the analysis of E-type uses. Following [Cooper \(1979\)](#), [Evans \(1980\)](#), [Heim and Kratzer \(1998\)](#), and others, [Elbourne \(2005\)](#) argues that E-type uses need to be analyzed as definite descriptions to capture the entire range of data. Since impersonal pronouns also seem to have E-type uses, this suggests that impersonal pronouns are also better analyzed as definite expressions (cf. [Kratzer 1997](#) and [Safir 2004](#)).

What can be made of this situation? To better grasp the (in)definiteness problem, it is necessary to take a closer look at the definiteness and indefiniteness criteria for nominal expressions, especially in connection with genericity.

## 2.4.2 Definiteness and indefiniteness

The conceptual difference between definite and indefinite expressions is one of the big open problems in the semantic and philosophical literature, and is still extensively discussed (cf. [Abbott 2006, 2014](#), on which the following overview is based; cf. also [Lyons 1999](#) for a general overview).

The basic assumption underlying this discussion is that, in general, all nominal expressions can be classified as either definite or indefinite expressions. Purely intuitively, a nominal expression is seen as definite if it can be used to talk about a particular individual. This individual can be abstract or concrete, and can either be a particular single individual, a particular group of individuals, or a particular mass ([Abbott 2014](#)).

Nominal expressions which do not pick out any particular individual are seen as indefinite.<sup>42</sup> Definite and indefinite descriptions (i.e. *the* + noun and *a* + noun) are taken as the prototypical examples of the two classes, while other nominal expressions are classified as definite or indefinite based on their behavior in test contexts which differentiate the prototypical examples.

One of the test contexts for definiteness, which originated from an observation in the syntactic literature, are existential-*there* sentences. In these sentences, the position after the copula cannot be filled by all types of nominal expressions. Specifically, indefinite descriptions can occur in the position after the copula while definite descriptions are ungrammatical in this position, see (67). This is called the “definiteness effect”.

- (67) a. *There is a man in the garden.*  
 b. \**There is the man in the garden.*

In analogy, other types of nominal expressions are classified as indefinite if they can occur after the copula in existential-*there* sentences, see (68). Otherwise, they count as definites, see (69).

- (68) a. *There is some man in the garden.*  
 b. *There are some/several/many/no men in the garden.*
- (69) a. \**There is Bill/it in the garden.*  
 b. \**There is that/every/Mary’s man in the garden.*  
 c. \**There are all/most (of the) men in the garden.*

These results are the basis for the classification in Table 2.5.

definite nominal expressions	indefinite nominal expressions
personal pronouns, demonstratives, definite descriptions, possessive noun phrases, proper names, universally quantified noun phrases, partitives	indefinite descriptions, bare nouns, non-universally quantified noun phrases, indefinite “this”

Table 2.5: Definite and indefinite nominal expressions

Milsark (1977) discusses complications of using existential-*there* sentences as test contexts for definiteness. He argues that some of the nominal expressions that are acceptable in existential-*there* sentences do not fit the intuition behind definiteness, i.e. reference to a particular individual. To account for this intuitive mismatch, he introduces two new labels, “weak” and “strong”, for expressions that can and cannot

<sup>42</sup>Abbott (2014) notes that universally quantified noun phrases, partitives, possessive noun phrases, and specific indefinites are problematic for this naive characterization of definiteness. These nominal expressions raise issues—even for more sophisticated formal accounts. Cf. Abbott (2006, 2014).

occur in existential-*there* sentences, respectively.<sup>43</sup> Since Milsark’s work, other critical works that claim that the “definiteness effect” found in existential-*there* sentences is a consequence of other semantic or pragmatic restrictions has been published (cf. [Ward and Birner 1995](#)). Nevertheless, the classification given in [Table 2.5](#) is still used in the literature to characterize the categories of definite and indefinite nominal expressions (cf. [Abbott 2006](#)).

Abbott also expresses reservations regarding another test for definiteness proposed in [Jackendoff \(1977\)](#). Jackendoff argues that only definite expressions may occur as embedded noun phrases in partitives, see [\(70\)](#). He calls this the “partitive constraint”.

- (70) *some of the apples, few of those options, all of Mary’s dogs*  
([Abbott 2014:11](#))

Abbott, however, argues that the only requirement partitives place on their embedded noun phrases is that they are interpretable as a group of individuals. Therefore, indefinite expressions that can be interpreted as a single group can also occur in partitives, see [\(71\)](#).

- (71) a. *He ate three of some apples he found on the ground.*  
b. *This is one of a number of counterexamples to the PC.*  
c. *Any of several options are open to us at this point.*  
([Abbott 2014:12](#))

The only exceptions for this requirement are bare plurals and mass noun phrases, although mass noun phrases can freely occur in mass partitives (cf. [Abbott 2014](#)).

- (72) a. *\*Most of books by Chomsky are on politics.*  
b. *\*Some of green slime is created by bacteria.*  
([Abbott 2014:12f](#))

So, in sum, there in fact does not seem to be a reliable *syntactic* test that captures the intuitive difference between definite and indefinite expressions.

In the philosophical and the semantic/pragmatic literature, various attempts were made to reduce the difference between definiteness and indefiniteness to a difference

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<sup>43</sup>A second test context proposed to be sensitive to definiteness is the English *have*-construction which indicates inalienable possession, see [\(i\)](#).

- (i) a. *She had a full head of hair.*  
b. *\*She had the full head of hair.*  
([Abbott 2006:5](#))

As in the case of existential-*there* sentences, definite descriptions are unacceptable in this construction. Cf. [Abbott \(2006\)](#).

in more basic contextual or discourse-based properties, most notably uniqueness and familiarity.

The reduction of definiteness to uniqueness of reference has its origins in Russell's (1905) analysis of definite and indefinite descriptions. Russell proposed that both definite and indefinite descriptions existentially quantify over individuals, but that definite descriptions additionally state that there is only one individual for which the description holds. That is, definite expressions require uniqueness of existence. Compare (73-b) and (74-b).

- (73) a. *A representative arrived.*  
 b.  $\exists x[\text{representative}(x) \ \& \ \text{arrived}(x)]$   
 (Abbott 2014:3)
- (74) a. *The representative arrived.*  
 b.  $\exists x[\text{representative}(x) \ \& \ \forall y[\text{representative}(y) \rightarrow x = y] \ \& \ \text{arrived}(x)]$   
 (Abbott 2014:3)

A minor complication that arises for this account is that uniqueness of existence seems to be too strong as a defining property of definiteness. In its strict formulation in (74-b), it is practically never given in the world. Therefore, the uniqueness requirement is usually contextually restricted to a relevant domain (cf. Abbott 2014 on the “problem of incomplete definite descriptions”).

The uniqueness account of definiteness is independent of Russell's quantificational analysis of definite and indefinite descriptions. Following Frege (1892), Strawson (1950) argues that the requirement that asks for uniqueness of existence for definites is not part of the asserted content of definite descriptions, but is presupposed.

- (75) a. *The representative arrived.*  
 b.  $\text{arrived}(\iota x[\text{representative}(x)])$

The  $\iota$ -term,  $\iota x[\text{representative}(x)]$ , presupposes that there is only one individual  $x$  such that  $x$  is a representative. If this requirement is met,  $\iota$ -term refers to this unique individual. In contrast to Russell's analysis, Strawson's formal analysis of definite descriptions is non-quantificational. The  $\iota$ -term directly contributes the unique individual to which the descriptive content applies.

There are various reasons to prefer analyses of definite descriptions in which uniqueness is presupposed. For example, sentential negation cannot affect the requirement of uniqueness of existence for the referent of the definite descriptions. Consider (76-a).

- (76) a. *The representative didn't arrive.*  
 b. Frege/Strawson:  $\neg \text{arrived}(\iota x[\text{representative}(x)])$

- c. Russell:  $\neg\exists x[\text{representative}(x) \ \& \ \forall y[\text{representative}(y) \rightarrow x = y] \ \& \ \text{arrived}(x)]$

The Frege/Strawson analysis for (76-a) in (76-b) captures the behavior of the uniqueness requirement relative to sentential negation. Russell’s analysis in (76-c), however, predicts that example (76-a) can be used as an objection to *The representative arrived* in case more than one representative arrived.

The main competitor of the semantic uniqueness account for definiteness is Heim’s (1988 [1982]) familiarity approach. Heim assumes that the semantic contribution of definite and indefinite descriptions is the same. Both types of expressions contribute variables restricted to their descriptive content. The difference between the two types of noun phrases is that indefinite descriptions always introduce new discourse referents while definite descriptions require their referents to have been introduced beforehand. These requirements of novelty and familiarity of reference are also seen as presupposed in the context.

Heim’s presuppositional account of familiarity runs into problems with “semantic definite descriptions” (also called “role-type definite descriptions”). These are definite descriptions for which the descriptive content *per se* already determines a unique referent. Contrary to “pragmatic/incomplete definite descriptions”, which signal uniqueness in the context of utterance, semantic definite description can be used to introduce new discourse referents (cf. Löbner 1985). For instance, the referent of the definite description *the new curling center at MSU* in example (77) is uniquely determined by the descriptive content *new curling center at MSU*.

- (77) *The new curling center at MSU, which you probably haven’t heard of, is the first of its kind.*  
(Abbott 2014:6)

Abbott argues that this problem for the familiarity account cannot be solved by invoking presupposition accommodation since this would take away all of the account’s predictive power: “Definites denote familiar entities unless they don’t.” (Abbott 2014:6).<sup>44</sup>

As an alternative to the familiarity requirement, Abbott (2014) aims to weaken the uniqueness requirement for some nominal expressions, and contrasts two types of uniqueness: (i) semantic uniqueness and (ii) referential uniqueness. Semantic uniqueness corresponds to Russell’s uniqueness of existence in the context; it is a semantic requirement placed on the utterance context. Referential uniqueness is a pragmatic property that applies to expressions used by the speaker to refer to a particular entity that he expects to be identifiable for the addressee.

For most definite nominal expressions, referential uniqueness is the variant which

<sup>44</sup>But see for instance Geurts (2010) for a defense of definiteness as presupposing givenness.

captures their behavior best: definite descriptions, proper names, personal pronouns, and demonstratives are referentially unique, but only proper names can be said to show semantic uniqueness.

Since Abbott's classification is based on intuitive characteristics connected to definiteness, as well as on results of tests which have been shown to depend on other semantic and/or pragmatic properties, it seems unclear to me what the conceptual insight is that follows from Abbott's conclusion. To my mind, the only conclusion that can be drawn at this point is that some nominal expressions share the property of referential uniqueness, and that definite descriptions—however referential uniqueness is spelled out in detail—are part of this class of expressions. Nevertheless for the rest of this section, I take referential uniqueness as the definition of definiteness, and classify all other expressions as indefinite.

One complicating factor for using Abbott's results on (in)definiteness in the discussion of the (in)definiteness problem is that Abbott (2006, 2014) explicitly excludes all non-referential uses of nominal expressions from the discussion. That is, she explicitly leaves aside bound uses of pronominal expressions and nominal expressions in generic sentences. Hence, Abbott's concept of definiteness can only be applied to the referential use of personal pronouns—which is classified as definite—and to the existential use of impersonal pronouns—which is classified as indefinite.

In contrast to Abbott, Lyons (1999) also considers nominal expressions in generic sentences. He argues that the meaning that is assigned to these expressions in generic sentences is independent of the definite/indefinite distinction.

Lyons introduces two new classificatory properties for definite expressions: *identifiability* and *inclusiveness*. Identifiability can, more or less, be equated with the property of referential uniqueness proposed by Abbott. Inclusiveness, on the other hand, refers to the observation that plural definite descriptions and definite mass descriptions refer to the maximal plurality of individuals that satisfy their descriptive content. Together, these two properties determine semantic definiteness. In contrast, a nominal expression is syntactically (in)definite if it has an (in)definite form and behaves morphosyntactically like an indefinite expression.

Following Krifka et al. (1995), Lyons distinguishes two classes of generic noun phrases:<sup>45</sup> (i) generic noun phrases that express generalizations about a plurality of individuals as a whole, i.e. a kind, and (ii) generic noun phrases that express a generalization about the members of a plurality individually.

English allows for a “generic interpretation” of definite singular noun phrases, indefinite singular noun phrases, and bare plurals. Definite plural noun phrases are not

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<sup>45</sup>Krifka et al. (1995) use the label “generic noun phrase” only for noun phrases that receive a kind reading. All other noun phrases are called “object-referring”.

available in general, but may be “interpreted generically” with nationalities and with nouns denoting classes of classes.

- (78) a. *Dogs are mammals.* (bare plural subject)  
 b. *A dog is a mammal.* (indefinite singular subject)  
 c. *The dog is a mammal.* (definite singular subject)  
 d. *The Germans like beer.* (definite plural subject)

Of these noun phrases, definite singular noun phrases and bare plurals can be used as kind-referring expressions; bare plurals and indefinite singular noun phrases can be used to generalize over the members of a plurality.

Regarding (in)definiteness, Lyons argues that all generic noun phrases show a similar behavior and distribution to definite noun phrases—independently of their class and morphological make up. He provides the following three diagnostic test contexts (Lyons 1999:197).

- (79) a. *Big as the/\*a boy was, he couldn't lift it.*  
 b. *Big as an elephant is, we'll find room for Nellie here.*  
 c. *Big as elephants are, you'll never get one to lift that load.*
- (80) a. *The/?A house is mine.*  
 b. *Surely a letter is mine if it's addressed to me.*  
 c. *'Vengeance is mine' said the president.*
- (81) a. *Is there a/?the dictionary in the house?*  
 b. *Is there a lion in Africa?*  
 c. *Are there dolphins on the verge of extinction?*

Lyons suggests that the tests in (79) and (80) show that generically interpreted singular indefinite descriptions and bare plurals pattern like non-generic definite descriptions. For instance, the definiteness test in (81), which is an instance of the test using existential-*there* sentences, seems to support this result since the indefinite noun phrases in (81-b) and (81-c) cannot be interpreted generically.

From these three tests, Lyons concludes that even though generic bare plurals and generic indefinite singular noun phrases are syntactically indefinite—they have an indefinite morphological form—they are semantically definite. Lyons further argues that semantic definiteness for generic noun phrases is expected since “their reference is to a whole ensemble”, and “they can perhaps also be said to be familiar”, i.e. they observe inclusiveness and identifiability (Lyons 1999:198).

For my part, I have doubts regarding the conclusions that can be drawn from Lyons's test contexts.<sup>46</sup> More importantly, however, I do not see how non-kind-referring noun

<sup>46</sup>When Lyons introduces these tests earlier on in the book, he states that they are not very reli-

phrases in generic sentences observe either inclusiveness or identifiability. As Krifka et al. (1995) argue, generic sentences express quasi-universal quantification over the members of the set described by the noun phrase in subject position. One notable property of quasi-universal quantification introduced by the generic operator is that it allows for exceptions. This means that quasi-universally quantified noun phrases are not inclusive in the same way as the plural definite article or true universal quantification. Identifiability is also not given since the exceptions to a generalization do not have to be identifiable (cf. Greenberg 2007). As a result, the plurality of individuals that the generic sentence generalizes over is not strictly identifiable either. Hence, Lyons' characteristic properties for definiteness seem to fail for non-kind-referring noun phrases in generics, and for similar reasons Abbott's referential uniqueness fails, as well.<sup>47</sup>

In contrast to non-kind-referring noun phrases in generics, kind-referring noun phrases seem to be identifiable even though they also allow for particular, exceptional individuals. Consequently—with respect to Abbott's characterization of definiteness—kind-referring noun phrases in generic sentences can be classified as definite expressions. As shown in Section 2.2, however, impersonally used impersonal pronouns cannot be combined with kind predicates. Therefore, they fall into the class of non-kind-referring generic expressions, see (82).

- (82) a. #/\**Man ist als Dodo ausgestorben.*  
           one is as dodo extinct  
           Unavailable: 'Dodos are extinct.'
- b. *One is extinct.*  
           Unavailable: 'People/humans are extinct.'<sup>48</sup>

Hence, I conclude that impersonal pronouns in their impersonal use should be classified as indefinite expressions.<sup>49</sup>

Even though this conclusion seems to be intuitively valid, it ignores a central observation from the literature on generic sentences: quasi-universal quantification over individuals is not contributed by the noun phrase, but is introduced by the covert generic operator. The indefinite noun phrases are argued to contribute only free variables ranging over the set of individuals for which the descriptive content holds (cf. Krifka et al. 1995); in other words, indefinite noun phrases in generic sentences are modelled as Heimian indefinites (cf. Heim 1988 [1982]). Hence, if the impersonal uses

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able, and provides various counterexamples (Lyons 1999:16f). The low reliability of existential-*there* sentences was also mentioned earlier in this section.

<sup>47</sup>Similar arguments to the ones given for non-kind-referring noun phrases in generics are usually given to argue for the indefiniteness of *most* and *any*. Cf. Abbott (2006)

<sup>48</sup>The only reading that is available for this sentence involves *one* being interpreted as a numeral, referring to one of several salient kinds.

<sup>49</sup>Lyons (1999:186) proposes that English *one* and its corresponding forms in other languages can be analyzed as indefinite singular generics with "arbitrary" human reference. This means that Lyons effectively groups impersonal pronouns with non-kind-referring expressions, as well.

of personal and impersonal pronouns are modelled in analogy to indefinite noun phrases in generic sentences, their quantificational force is also contributed by the generic operator, and their (in)definiteness is not directly perceivable. So in sum, if a unified account for all uses of personal and impersonal pronouns is aimed for, the presence of the generic operator may not be hard-wired in the respective lexical entries.<sup>50</sup>

Given this result, how can the (in)definiteness of personal and impersonal pronouns in their impersonal use be determined? I argue that one does not have access to hints regarding their (in)definiteness apart from comparisons of their behavior with that of bare plurals and indefinite singular noun phrases in generic sentences. And these expressions have been argued to be syntactically and semantically indefinite when they occur in episodic sentences.

### 2.4.3 (In)definiteness and quantificational variability

An indefiniteness test that frequently discussed in the recent semantic literature is the possibility of quantificational variability effects with adverbs of quantification. Lewis (1975) first observed that sentences containing indefinite descriptions and adverbs of quantification show a peculiar behavior: rather than quantifying over situations, times, or eventualities, the adverb seems to quantify directly over the individuals denoted by the indefinite description; consider (83).

- (83) a. *A basketball player is sometimes short.*  
       ~ *Some basketball players are short.*  
       b. *Basketball players are sometimes short.*  
       ~ *Some basketball players are short.*

This effect does not arise with definite descriptions, proper names, and referentially used personal pronouns, see (84).

- (84) a. #*The basketball player over there is sometimes short.*  
       b. #*Peter is sometimes short.*  
       c. #*He is sometimes short.*

In the only interpretation that is available for the sentences in (84), the adverb *sometimes* quantifies over situations, which suggests that the height of an individual may vary over time.

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<sup>50</sup>If the generic operator were to be hard-wired in the lexical entry of an impersonal pronoun, a rule of “generic disclosure”, similar to “existential disclosure”, would be needed to account for the referential and existential uses, and the observed quantificational variability effects (cf. Dekker 1993). A genuine unified account which does not need to stipulate a rule of this kind is arguably more elegant. Note, however, that this argument still crucially relies on the assumption that all uses of personal and impersonal pronouns are associated with the same lexical entry.

The reliability of this diagnostic has been questioned recently in [Hinterwimmer \(2005\)](#) and [Endriss and Hinterwimmer \(2006\)](#). Hinterwimmer and Endriss and Hinterwimmer argue that quantificational variability(-like) effects are also observable for singular and plural definite descriptions. They give the following examples.

(85) *Paul HATES going to jazz-concerts: The PIANO-player always flirts with his GIRLFRIEND.*

([Hinterwimmer 2005:69](#))

(86) *The people that lectured on kangaroos at the conference last summer were usually open minded.*

([Endriss and Hinterwimmer 2006:3](#))

For definite singular noun phrases, [Hinterwimmer \(2005\)](#) argues that they have a quantificational variability-like reading, which arises indirectly via universal quantification over a set of jazz-concert-situations; consider (85). Since for every jazz-concert there is a unique, but possibly different piano-player, the feeling arises that *always* quantifies over individuals. These cases differ from quantificational variability in the strict sense as argued for in [Lewis \(1975\)](#), though, since no such functional dependence on a set of situations is required.<sup>51</sup> These quantificational variability-like effects are in general more constrained than true quantificational variability effects; the following specific conditions need to be met: (i) a set of situations needs to be salient in the context, (ii) the definite singular noun phrase needs to refer to a unique, but possibly different individual in each of these situations, and (iii) a part of the singular definite description needs to carry a focus accent or a contrastive-topic accent. The final requirement is indicated in example (85) by upper case ([Hinterwimmer 2005](#)).

For the second, plural definite description cases exemplified in (86), [Endriss and Hinterwimmer](#) argue that these noun phrases show true quantificational variability effects since the adverb of quantification, they argue, may quantify over the atoms of the plurality picked out by the plural definite description. However, the availability of quantificational variability effects differs for bare plurals, singular indefinite descriptions, and plural definite descriptions. Sentences containing singular indefinite and plural definite descriptions need to observe the “tense agreement constraint” (cf. [Endriss and Hinterwimmer 2006](#)): If a modifying restrictive relative clause and the matrix predicate do not agree with respect to tense marking, no quantificational variability effects arise. Consider examples (87-a) and (87-b).

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<sup>51</sup>But see [von Stechow \(2004/1995\)](#), [Hinterwimmer \(2005\)](#), and [Elbourne \(2005\)](#), among others, for a formalization of quantificational variability effects which uniformly involves quantification over situations in situation semantics. For these analyses, quantificational variability effects always arise indirectly.

- (87) a. ??*A car that was bought in the eighties is usually blue.*  
 (Endriss and Hinterwimmer 2006:4)  
 b. ??*The cars that were bought in the eighties are usually blue.*  
 (Endriss and Hinterwimmer 2006:13)

In contrast, no such constraint is placed on bare plurals, see (88).

- (88) *Cars that were bought in the eighties are usually blue.*  
 (Endriss and Hinterwimmer 2006:10)

Quantificational variability effects with bare plurals, on the other hand, degrade if the relative clause is temporally specific, compare (86) to (89).

- (89) ??*People that lectured on kangaroos at the conference last summer were usually open minded.*  
 (Endriss and Hinterwimmer 2006:13)

I do not review the analyses proposed in Hinterwimmer (2005) and Endriss and Hinterwimmer (2006) since this is beyond the scope of this discussion. The empirical observations made in Hinterwimmer (2005) and Endriss and Hinterwimmer (2006) already suffice to compare them to the quantificational variability effects found with personal and impersonal pronouns. Any parallel that can be found between the impersonal uses and one of the cases discussed by Hinterwimmer or Endriss and Hinterwimmer can be taken as evidence for an analysis of the impersonal uses in parallel to the noun phrase occurring in that type of effect. The following examples show quantificational variability effects for English and German impersonal and personal pronouns.

- (90) a. *One usually lives to be 60.*  
 b. *You usually live to be 60.*
- (91) a. *Ich bin als Bergarbeiter meist älter als 60.*  
 I am as miner usually older than 60  
 b. *Du bist als Bergarbeiter meist älter als 60.*  
 you are as miner usually older than 60  
 c. *Man ist als Bergarbeiter meist älter als 60.*  
 one is as miner usually older than 60  
 ‘As a miner, one is usually older than 60.’

To start out, the impersonal uses cannot be grouped with singular definite descriptions since the data does not meet the requirements formulated in Hinterwimmer (2005). First, no set of salient situations is provided by the examples in (90) and (91) that the adverb could quantify over. Second, none of the pronouns carry an accent. In fact, for the personal pronouns *ich*, *du*, and *you*, the quantificational variability ef-

fects understood in (90) and (91) vanish if the pronouns are read with a focus accent. This is a direct result of the observation discussed in Section 1.3 that stress on the pronoun blocks an impersonal interpretation. Hence, the quantificational variability effects found in (90) and (91) speak against an analysis of the impersonal uses a singular definite descriptions.

In contrast, the behavior of the pronouns in (90) and (91) is consistent with them being analyzed similar to plural definite descriptions, singular indefinite descriptions, and bare plurals. Since the personal and impersonal pronouns under discussion all show singular agreement—if this is a valid criterion, at all—one would expect them to show the same behavior as singular indefinite descriptions. As the following example shows, this is only partly borne out.<sup>52</sup>

- (92) a. *?Du bist als Bergarbeiter, der in den 80er Jahren begonnen hat,*  
 you are as miner who in the 80s years started has  
*meist älter als 50.*  
 usually older than 50  
 ‘As a miner who started to work in the 80s, one is usually older than 50.’
- b. *??Du bist als Bergarbeiter, der am Sonntag sein 40-jähriges*  
 you are as miner who at-the Sunday his 40-years  
*Jubiläum feiert, meist älter als 60.*  
 anniversary celebrates usually older than 60  
 ‘As a miner who celebrates his 40 year anniversary on Sunday, one is usually older than 60.’

While (92-a) supports the similarity with singular definite descriptions, (92-b) points towards a parallel with bare plurals. Further work is needed to tease apart this conflicting evidence.

So, unfortunately, the discussion in this section, to my mind, does not resolve the conceptual side of the (in)definiteness problem. The discussions on genericity and quantificational variability effects point towards an analysis of the impersonal uses as indefinite singular or bare plural expressions. In contrast, the discussion about quantificational variability effects in Section 1.2 suggests that all referential uses of personal pronouns are definite. For the existential use of impersonal pronouns in episodic sentences, an indefinite account is again to be preferred (cf. Section 2.2).

In its entirety, the (in)definiteness problem can be summed up as follows:

- (93) *(In)definiteness problem:*  
 Personal pronouns in their referential use seem to be definite expressions while impersonal pronouns in their existential use seem to be indefinite expressions.  
 In addition, personal pronouns and impersonal pronouns in their impersonal

<sup>52</sup>I thank Sebastian Bücking (p.c.) for his judgements and detailed comments on the acceptability of (92-a) and (92-b).

uses seem to be best analyzed as indefinite expressions, i.e. as contributing a variable which is bound by the generic operator. This also fits the observations regarding the pronouns' quantificational variability effects. In contrast, the bound and E-type uses of personal and impersonal pronouns again seem to be definite expressions.

For the formal, unified account that aims to capture all of the uses of first and second person singular pronouns which will be proposed in Section 2.5.3, I adopt a bare variable analysis for indefinite expressions in the spirit of Heim (1988 [1982]) and Diesing (1992). This idea on the formal level is brought together with the conceptual considerations addressed in Nunberg (1993): a strict Kaplanian analysis of the referential uses does not capture the full range of data observable for first and second person singular pronouns.

## 2.5 An alternative proposal for a unified account

### 2.5.1 A return to Nunberg (1993)

Even though the (in)definiteness problem seems to be hard to get under control, the project of finding a unified “indefinite account” for first and second person singular pronouns should, in my opinion, not be discarded just yet. The discussion of the behavior of impersonal pronouns in Section 2.2 and Malamud's (2006) arguments against positing a lexical ambiguity for the referential and impersonal uses of second person singular pronouns (cf. Section 2.3.1) provide good reasons to investigate this line of inquiry further. So, the aim of this section is to propose a new, unified account for first and second person singular pronouns. Even though the account that I introduce in Section 2.5.3 is formally quite similar to the account in Malamud (2006, 2007), the final execution and the underlying motivations of the two accounts differ. Ultimately, they both suffer from similar problems, though (cf. Section 2.6).

In Chapter 1, I briefly introduced Kaplan's (1978 [1989]) proposal for the meaning of first and second person singular pronouns and the empirical problems it faces. In this subsection, I return to the critical discussion of direct-reference accounts of pronominal meaning put forth in Nunberg (1993). Nunberg's criticism and this proposal serve as the conceptual motivation for the account proposed in Section 2.5.3.

Nunberg (1993) aims to show that the referential uses of first and second person pronouns are more complex than is generally assumed—and as modelled in Kaplan (1978 [1989]). He starts out by critically reviewing the three assumptions at the heart of direct-reference accounts based on Kaplan (1978 [1989]), and shows that at least one of these assumptions needs to be discarded to capture the relevant data adequately.

The first assumption made by direct-reference accounts is that indexical expressions have special interpretive properties. In contrast to definite descriptions, their meaning

is not contributed to the truth-conditional content of the sentences they appear in. That is, they do not have a descriptive, but an “indicative” meaning: the semantic function specified in their lexical entries is to point out a specific individual in the context. Nunberg calls the individual referred to by an indexical its “index”.<sup>53</sup>

The second assumption is that sentences containing indexical expressions always express singular propositions, i.e. propositions that are about a specific individual, which is part of the propositional content. The second assumption follows from the first assumption if it is assumed that indexical expressions always contribute a specific individual, and never e.g. a property. Contrary to indexical expressions, it is argued, definite descriptions are ambiguous between a referential and an attributive reading which result in singular and non-singular propositions, respectively (cf. [Donnellan 1966](#)).

The first two assumptions are linked via the third assumption: an indexical expression always refers to its index. That is, the special semantic function of indexical expressions that is given by the first assumption can never be modified or weakened to allow indexicals to contribute a different “object” to the truth-conditional content of a sentence.

Nunberg attacks the third assumption: He argues that by destroying the strict link between the first and the second assumption, the second assumption can be discarded as well, and an account that is linguistically more adequate can be designed. His final proposal, in a nutshell, is that indexical expressions as a whole are indeed directly referential—their semantic contribution to the truth-conditions of a sentence is not mediated by an intermediate step that involves descriptive content. The rules for determining their final referents, however, involve an indirect, two-step procedure.

The truly problematic examples for the direct-reference accounts, Nunberg argues, are those in which the index-referent identity assumption is violated. These examples all involve *deferred ostension* (or: *deferred reference*), and are usually seen as pragmatically derived exceptions to the meaning proposed by Kaplan.<sup>54</sup> Nunberg, however, points out that deferred ostension is a semantic strategy that is in fact very common in the context of plural personal pronouns. To account for this observation, Nunberg analyzes deferred ostension as the default strategy employed by first and second person plural pronouns to determine their referents.

The two-step procedure proposed by Nunberg is based on the idea that the meaning of indexical expressions involves three components that interact to determine the final referent. Nunberg motivates and illustrates his general proposal with examples of first person plural *we*. The central observation on the semantics of *we* is that it rarely ever

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<sup>53</sup>Note that Nunberg’s (1993) use of the term “index” is different from the use of the term in the literature on possible worlds semantics. There, “index” is used interchangeably with the term “possible world” (cf. [Lewis 1986](#)).

<sup>54</sup>Nunberg cites [Recanati \(1993\)](#) for an account of deferred ostension by means of pragmatic inference.

refers to a plurality of speakers. Rather, *we* is most commonly used to refer to a group of individuals that a single speaker is part of. In these cases, none of the other members of the group have to be present in the context either.

Even though Kaplan (1978 [1989]) does not talk about plural pronouns, this observation is problematic from a general direct-reference theoretic point of view. One possibility to account for it is to claim that first person plural pronouns are not true indexical expressions. Nunberg discards this possibility as undesirable, and pursues the following alternative: (i) the index-referent identity requirement is simply not valid for plural personal pronouns, but (ii) the referent can be derived from the index. He proposes that all types of indexical expressions, e.g. personal pronouns and demonstratives, are made up from three subparts: a *deictic component*, a *relational component*, and a *classificatory component*. These three subparts interact to determine the semantic value, i.e. the referent, of any given indexical expression.

The deictic component picks an entity from the context, the “index”. For *we*, the only relevant, contextually given individual, and therefore the index, is the speaker/the set of speakers of the utterance.

The relational component places certain requirements on the relation that holds between the index and possible referents that may be determined from the two-step process. In the case of *we*, the referent has to be a plurality of individuals that contains the speaker. Hence, the relational component for *we* restricts the possible relations to those between the index and the referent for which the index is part of the referent (i.e. “the index instantiates the interpretation”, Nunberg 1993:9). The relation that holds between the index and the referent in each specific case depends on speaker intentions, the expression’s conversational purpose, and the discourse context. Nunberg suggests that in some cases even the speaker is not able to determine the specific relation that holds between the index and the referent in the context. He gives the following example.

- (94) Mother to child: *We don't talk with our mouths full.*  
(Nunberg 1993:16)

The third component is the classificatory component, which contains morphosyntactic and semantic featural information, e.g. on animacy, number, and gender, that further constrains the choice of referent. *We*, for instance, always requires the referent to be an animate plurality.<sup>55</sup>

<sup>55</sup>In the same paper, Nunberg (1993) also discusses examples, like (i), in which there is a clash between the predicate and the individual denoted by the subject noun phrase in that the predicate can only apply to another object related to that individual.

- (i) *I am parked out back.*

For this type of examples, Nunberg proposes a different analysis from the one discussed in this section. His analysis involves a pragmatically triggered reanalysis of the meaning of the matrix predicate. For details cf. Nunberg (1993). Since these examples are irrelevant for my purposes, they are left aside.

The two-step process to determine the referent of an indexical expression, like *we*, first involves determining the index, and then “resolving the relational component to determine the interpretation” (Nunberg 1993:9). The lexical meaning of indexical expressions can therefore be seen as providing a guideline and general constraints on how to determine their referents. The relation and the final referent are determined from/in the context.

On the basis of Nunberg’s three-component account, deferred ostension can be characterized as the “semantic/pragmatic process” that takes place when the relation that is chosen to link the index and the referent is not the identity relation. For first person plural *we*, as Nunberg notes, this is the rule rather than the exception.

Nunberg’s two-step account provides a new starting point to attack the second assumption of direct-reference accounts, i.e. that sentences containing indexical expressions always express singular propositions. As counter-examples, Nunberg presents cases in which the referent of *we* cannot be a specific plurality. One class of problematic examples involves cases for which the contribution of *we* can be paraphrased by a bare plural or a plural definite description. Consider examples (95-b) and (96-b).

- (95) a. As spoken by a woman:  
       *We are less likely to contract the disease than men.*  
 b. *Women are less likely to contract the disease than men.*  
 (Nunberg 1993:12)
- (96) a. As spoken by a Supreme Court Justice: *We might have been liberals.*  
 b. *The Justices of the Supreme Court might have been liberals.*  
 (Nunberg 1993:14)

From these examples, Nunberg concludes that the range of interpretations for indexicals and descriptive noun phrases (i.e. bare plurals, definite descriptions, and others) is not that different. He, however, stresses the point that, in contrast to descriptive noun phrases, indexicals are still as a whole indicative; the informational content of the three components is not contributed to the truth-conditions of the sentence in which an indexical occurs.

Nunberg also observes cases of deferred ostension for singular personal pronouns, although they are less common. Nunberg argues that this is to be expected since the classificatory component of *I* restricts possible referents to singular, animate individuals. That is, *I* requires the speaker to instantiate, i.e. be part of, the singular referent determined via some contextually given relation. Given these requirements, in

the majority of cases, the referent can only be the speaker.<sup>56</sup> Nevertheless, in special circumstances, deferred ostension is also observable for *I*, see (97).

- (97) The condemned prisoner:  
*I am traditionally allowed to order whatever I like for my last meal.*  
 (Nunberg 1993:20)

In the only reasonable interpretation of example (97), the first person singular pronoun does not refer to the speaker of the utterance. It is implausible to assume that there is a tradition concerning last meals for a single individual. Instead, the meaning naturally assigned to example (97) is (98), in which the singular definite description is read attributively.

- (98) *The condemned prisoner is traditionally allowed to order whatever he likes for his last meal.*<sup>57</sup>  
 (Nunberg 1993:21)

Given this paraphrase, the referent picked for *I* in the preferred interpretation is the respective condemned prisoner in those occasions in which the last-meal tradition applies. Since the referent of *I* for each occasion is a single individual, the requirements of the classificatory component of *I* are met. The same holds for the conditions of the relational component since at the time of utterance the speaker is a condemned prisoner.

It is clear that a direct-reference account cannot derive this interpretation. *I* is assumed to always contribute the speaker in the utterance context irrespective of co-occurring material which induces a shift in the circumstances of evaluation, and suggests a deferred ostension interpretation.

A comparison between indexicals and proper names is instructive. Proper names are also assumed to contribute their referents directly to the truth-conditions of a sentence (cf. Kripke 1980). Hence, a direct-reference account predicts that indexicals should show the same behavior as proper names. This is not the case, though, as exemplified by (99).

- (99) *Darnay (the prisoner currently in cell 15) is traditionally allowed to order whatever he likes for his last meal.*  
 (Nunberg 1993:21)

The proper name *Darnay* in (99) cannot contribute the same “functional meaning” that

<sup>56</sup>The same observations made for *we* and *I* can also be made for singular and plural second person pronouns, which also only differ with respect to their classificatory components.

<sup>57</sup>The attributive interpretation of the definite description in (98) can be rendered more specifically as: *The condemned prisoner, whoever it is, is traditionally allowed to order whatever he likes for his last meal.*

is contributed by *I* in (97), and therefore does not share the interpretation paraphrased in (98). This discrepancy can be seen as evidence against an account that analyzes deferred reference as a pragmatic inference. If indexicals and proper names were both indicative expressions with the same rigid singular reference, then the same pragmatic inferences that derive deferred reference for sentences containing indexical expressions should also be able to derive deferred reference for sentences containing proper names.<sup>58</sup> Hence, deferred reference has to be directly connected to the meaning of indexical expressions.

Another argument against deferred reference involving a pragmatic process is that the literal sentence meanings of most of the examples with deferred reference readings are odd or even incoherent. Therefore, it is unclear how the pragmatic inferences needed for deferred reference can be applied at all.<sup>59</sup>

Grimberg (1994) criticizes Nunberg's sketch of his two-step process. She argues that the classificatory component in Nunberg's account does not figure in any relevant sense in the process, but should figure prominently in an intermediate step which determines the general class(es) of possible referents. If the classificatory component is added into the process with this role, it also places restrictions on the relation between the index and the referent that is contextually chosen. Consider the following, adapted three-step process:

- (100) a. First, resolve the deictic component to determine the index.  
 b. Second, resolve the classificatory component to determine the type of referent with respect to number, gender, animacy, etc.  
 c. Third, resolve the relational component to determine the referent.  
 (Grimberg 1994:359)

I adopt Grimberg's modification as the conceptual basis on how to think about the interaction of Nunberg's three components.

In sum, Nunberg's three-component account maintains two aspects of strict direct reference accounts: (i) an indexical picks an individual from the context, and (ii) an indexical is an indicative expression which does not contribute any descriptive content to the truth-conditions of a sentence. Yet, his account also differs from direct reference accounts in one crucial aspect: the referent contributed to the truth-conditional mean-

<sup>58</sup>Nunberg (1993) crucially assumes that pragmatic processes in general can only apply to sentences as a whole. Therefore, he talks about deferred reference readings for sentences, instead of deferred reference readings for indexicals or proper names.

<sup>59</sup>Powell (1998) attacks this line of reasoning. Recanati (1993), who Nunberg cites as a proponent of the pragmatic view on deferred reference, argues for local pragmatic processes which generate the deferred referent from the literal meaning of the indexical before the truth-conditional meaning of the entire sentence is composed. It seems to me that Recanati's local pragmatic processes and Nunberg's semantic two-step process are able to derive the same results. Moreover, it seems that both accounts, more or less, work in the same manner; Recanati just calls it a pragmatic, and Nunberg a semantic process.

ing of a sentence does not have to be the individual picked from the context. Instead, other referents may be chosen based on their relation to the contextually determined individual.

Before going on to discuss a formalization of pronominal semantics inspired by Nunberg (1993), I briefly address a consideration regarding the connection between the impersonal uses of personal pronouns and their deferred ostension readings.

Nunberg's account is not designed to account for impersonal uses of personal pronouns. At least one of Nunberg's examples, however, could be analyzed as containing an impersonal use of *you*. Consider the example in (101).

- (101) Chess teacher to a student who played 4.  $N \times P$ :  
*According to all textbooks, you often get in trouble with that move.*  
 (Nunberg 1993:21)

The deferred reference interpretation of (101) can be paraphrased as in (102).

- (102) *According to all textbooks, the person who plays 4.  $N \times P$  often gets in trouble with that move.*  
 (Nunberg 1993:21)

This interpretation of *you* in (101) is the same as the interpretation of the attributively used singular definite description *the person who plays 4.  $N \times P$*  in (102). As discussed in Section 2.4, singular definite descriptions can interact with quantification over a set of situations induced by an adverb of quantification. In these cases, quantificational variability-like effects arise (cf. Hinterwimmer 2005). One prerequisite for this reading is that each situation contains only one single individual for which the descriptive content of the singular definite description holds. For the paraphrase in (102), the set of situations could be fixed as those occasions in which someone plays 4.  $N \times P$ . Therefore, (102) can be made more precise, see (103).

- (103) According to all textbooks: For most occasions where someone plays 4.  $N \times P$ , the unique person who plays 4.  $N \times P$  gets in trouble with 4.  $N \times P$ .

In case *you* is interpreted impersonally, it can either show a quantificational variability effect with the adverb of quantification *often*, or be interpreted as bound by the generic operator. The first option is paraphrased in (104). For the second option, *often* is interpreted in the scope of a generic operator as paraphrased in (105).

- (104) According to all textbooks: Most people who play 4.  $N \times P$  get in trouble with 4.  $N \times P$ .
- (105) According to all textbooks: For all relevantly normal people regarding the move 4.  $N \times P$ , it is often the case that they get in trouble with 4.  $N \times P$ .

If deferred reference and the impersonal use of personal pronouns are two distinct phenomena, the chess example is three-way ambiguous with the interpretations given in (103), (104), and (105). At this point it is unclear, though, whether all of these interpretations constitute distinct readings of (101). As far as I can tell, the German translation of (101) in (106) is only two way ambiguous between an impersonal and a referential use of *du*.

- (106) *Allen Lehrbüchern zufolge kommst du mit diesem Zug oft in*  
 all textbooks according-to comes you with this move often in  
*Schwierigkeiten.*  
 trouble  
 ‘According to all textbooks, you often get in trouble with that move.’

The readings resulting from an impersonal use of *du* and the deferred reference reading for *du* intuitively fall together.

Based on this observation, it could be argued that the impersonal use and the deferred ostension readings for singular personal pronouns are one and the same, and therefore should be given the same analysis. As argued in Sections 2.2 and 2.3, however, the impersonal uses of personal and impersonal pronouns do not behave like singular definite descriptions while personal pronouns in deferred ostension cases do. I will not try to resolve this problem; a detailed discussion of the link between the impersonal use and the deferred reference readings of personal pronouns is out of the scope of this thesis.

## 2.5.2 A formal account inspired by Nunberg (1993)

Nunberg (1993) does not provide a full formalization for his three-component account. For some of the examples he discusses, he suggests truth-conditions, though. For instance, for (107-a) he argues that *we* contributes a contextually determined kind, and sketches the formula in (107-b).

- (107) a. *We don't talk with our mouths full.*  
 b.  $\neg\text{Talk-with-their-mouths-full}(\iota xR(c_s)(x))$   
 where  $x$  ranges over kinds  
 (adapted with minor changes from Nunberg 1993:16f)

Inspired by Nunberg's account, Elbourne (2008) proposes a formal account to analyze demonstratives. He argues that pronominal expressions should be analyzed as definite descriptions<sup>60</sup>, and that, once formalized, Nunberg's proposal can also account for

<sup>60</sup>This view goes back to at least Elbourne (2005) and the observation that E-type uses of third person singular pronouns require an analysis as definite descriptions. Elbourne generalizes this idea to all uses of third person pronouns.

deferred reference uses of third person singular personal pronouns and bare and complex demonstratives.

Elbourne proposes a syntacticized version of Nunberg’s account; for pronominal expressions, he introduces the complex syntactic representation in (108).

(108) [ *pronoun* [  $R_1$   $i_2$  ] ]

$R$  . . . models the contextually determined relation

$i$  . . . models the index

(cf. Elbourne 2008:421)

The variables  $i$  and  $R$  model the index and the contextually determined relation holding between the index and the referent. Both variables are a fixed part of the syntactic representation of personal pronouns, and are left unbound.<sup>61</sup>

The paraphrases given by Nunberg for the deferred reference examples fit in with Elbourne’s previous work on pronouns as definite descriptions (cf. Elbourne 2005, 2008). Although Nunberg at some point suggests that the referent of a personal pronoun can be either an individual or (essentially) an individual concept, Elbourne aims for maximal generality, and argues that a pronoun always contributes an individual concept, i.e. a function from worlds/situations to individuals.

To generate the individual concept interpretation compositionally, Elbourne proposes that  $R_1$  is a variable of type  $\langle e, \langle se, st \rangle \rangle$  (i.e. an intensional relation between individuals and individual concepts), and  $i_2$  is a variable of type  $e$ . The values of the free variables  $R_1$  and  $i_2$  are specified contextually by the variable assignment  $g$ . The denotation of the subtree [  $R_1$   $i_2$  ] is  $R(i)$ , which is of type  $\langle se, st \rangle$ .<sup>62</sup>

The pronominal forms are interpreted as definite determiners that take  $R(i)$  as their argument, and return the individual concept  $\lambda s. \iota x [R(i)(\lambda s'.x)(s) = 1]$ . This is the concept that returns the unique individual  $x$  such that the “variable concept”,  $[\lambda s'.x]$ , stands in relation  $R$  to the index  $i$  in a given situation of evaluation  $s$ .<sup>63</sup>

<sup>61</sup>Elbourne (2008) states that  $i$  and  $R$  correspond to the deictic component and the relational component, respectively. This does not correspond to Nunberg’s original proposal. The relational component does not provide the relation in which the index and the referent stand to each other, but only general constraints on possible relations. Furthermore, the indexical component acts like a function from contexts to individuals, and cannot be equated with its output. Consequently, to stay true to Nunberg’s original account,  $R$  can only be meant as the relation that was determined contextually and/or through speaker intentions, and is constrained by the relational component. Similarly,  $i$  has to be seen as the index.

<sup>62</sup>For reasons of simplicity and readability, I use  $R$  and  $i$  for both the variables and their contextually assigned values  $g(1)$  and  $g(2)$ , respectively.

<sup>63</sup>Compare the meaning proposed for *it* in (109) to the meaning usually assigned to the definite determiner *the* in (i).

(i)  $\llbracket \text{the} \rrbracket^{g,w,c} = \lambda f_{\langle se, st \rangle} . \lambda s. \iota x [f(\lambda s'.x)(s) = 1]$   
(Elbourne 2008:416)

$$(109) \quad \llbracket \text{it} \rrbracket^{g,w,c} = \lambda f_{\langle se,st \rangle} . \lambda s . \iota x [f(\lambda s' . x)(s) = 1]$$

(Elbourne 2008:421)

The interpretation of an “indexical structure” is computed from its complex underlying structure as shown in the following example.

$$(110) \quad \begin{aligned} & \llbracket \llbracket \text{pronoun} [R \ i] \rrbracket \rrbracket^{g,w,c} = \\ & \llbracket \text{pronoun} \rrbracket^{g,w,c} (\llbracket R \rrbracket^{g,w,c} (\llbracket i \rrbracket^{g,w,c})) = \\ & \lambda f_{\langle se,st \rangle} . \lambda s . \iota x [f(\lambda s' . x)(s) = 1] (R(i)) = \\ & \lambda s . \iota x [R(i)(\lambda s' . x)(s) = 1]^{64} \end{aligned}$$

Depending on the contextually determined value for  $R$ , the semantic contribution of a pronoun corresponds to a deferred reference reading or to a standard referential reading.

Elbourne (2008) does not apply the above formalization to first and second person singular pronouns. Given his inspiration, however, an account of these pronouns can be given by straightforwardly assigning the values proposed in Nunberg (1993) to the variables  $R$  and  $i$ . The non-deferred referential reading for  $I$ , for example, is derived by contextually assigning the identity relation to  $R$ :

$$(111) \quad \lambda y_e . \lambda x_{\langle se,st \rangle} . \lambda s . y = x(s) \text{ in } s$$

The index  $i$  is fixed by the lexical entry of  $I$  to be the speaker of the utterance,  $c_s$ . The result for the referential use of  $I$  without deferred ostension is given in (112).

$$(112) \quad \lambda s . \iota x [c_S = [\lambda s' . x](s) \text{ in } s] = \lambda s . \iota x [c_S = x \text{ in } s]$$

Elbourne does not explicitly formalize the classificatory component. He suggests, however, that presuppositional  $\phi$ -features could be included in his account, i.e. morphosyntactic features that trigger presuppositions on the final semantic value of a pronoun (cf. Heim and Kratzer 1998 and Section 1.5.3).

Notably in Elbourne’s account, the lexical pronominal expression is only one of three parts featuring in a complex structure. The final semantic value that Nunberg proposes as the semantic contribution of a pronominal expression is therefore not the meaning of the lexical pronominal expression, but the meaning that is assigned to the entire complex tree structure in (108).<sup>65</sup>

One problematic aspect of Elbourne’s formalization in general is his choice to fully syntacticize Nunberg’s original account. Introducing the variables  $R$  and  $i$  into the syn-

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In Elbourne’s system, the definite determiner takes properties of individual concepts as arguments. Elbourne assumes that each nominal element is evaluated with respect to a situation variable.

<sup>64</sup>Compare this denotation with Nunberg’s suggestion in (107-b).

<sup>65</sup>For reasons of space, I do not give Elbourne’s analysis of demonstratives as definite descriptions based on his formalization. The interested reader is referred to Elbourne (2008:423ff).

tax is a major conceptual departure from Nunberg's original proposal. Nunberg argues, in fact quite forcefully, that for none of the components, the values are contributed to the truth-conditions of the sentence. So, even though the semantic values contributed by an indexical may be similar to the contribution of a descriptive nominal expression, the indexicals' lexical meaning is strictly indicative. In Elbourne's formalization, on the other hand, personal pronouns always contribute descriptive content—even in their standard referential uses that do not involve deferred ostension. As discussed in Section 1.5.2, Kaplan and Nunberg argue against analyzing *I* as *the speaker (of this utterance)* since definite descriptions in contrast to indexicals interact with operators on worlds/situations of evaluation. The descriptive content derived in Elbourne's formalization of Nunberg's account for the standard referential use of *I*, i.e. *being identical to  $c_S$* , is different from the descriptive content argued against by Kaplan and Nunberg. Nevertheless, this proposal runs into similar problems. The following sentence is intuitively true, but since definite descriptions involve a uniqueness presupposition that cannot be satisfied in the accessible worlds (because of the antecedent), the sentence is predicted to be truth-valueless.

(113) *If no one were to exist, I would not exist, either.*

Another unfortunate aspect of Elbourne's proposal regarding the aim of this thesis is that his formalization cannot be used to capture the impersonal uses of personal pronouns: singular personal pronouns in all of their uses come out as singular definite descriptions. In the following section, I modify Elbourne's semantic proposal for my purposes, and build on it to propose a unified account of a different kind to capture the impersonal and referential uses of personal pronouns. The complex syntactic structure proposed in (108) is, for now, adopted as it is.

### 2.5.3 A unified account of personal pronouns as indefinites

Having set the stage in the previous subsections, I now turn to propose a unified account of all uses of first and second person singular personal pronouns.<sup>66</sup> The proposal is based on the formal analysis of impersonal pronouns as Heimian indefinites (cf. Section 2.3), and the syntactic structure proposed in Elbourne (2008). The basic strategy at the heart of the account is, more or less, to assimilate personal pronouns to impersonal pronouns.

Semantically, I suggest, pronomial structures are Heimian indefinites that contribute descriptive content based on a contextually determined relation in the sense of Nunberg (1993). The relation links the contextually contributed index to a free variable, which may then be bound by various quantifiers and operators, just like for impersonal

<sup>66</sup>A previous version of this account is discussed in Zobel (2010).

pronouns. The pragmatic differences between personal and impersonal pronouns observed in Section 1.4 are captured by placing different restrictions on the domain from which the values of the variable may be taken. In the case of personal pronouns, the domain is restricted by the three components proposed by Nunberg (1993); impersonal pronouns, on the other hand, are only restricted to animate individuals. Note that this means that impersonal and personal pronouns are not analyzed completely identically.

In the course of the following proposal, I focus exclusively on German first person singular *ich* and second person singular *du*. But, the account should be applicable to other personal pronouns that allow for referential and impersonal uses, as well.

Examples (114) and (115) repeat Nunberg's proposal for *I* and *you*.

- (114) The components of *I*:
- a. deictic component: the index is the speaker in *c*
  - b. relational component: restricts the possible relations to those that relate the index to semantic values that the speaker instantiates
  - c. classificatory component: constrains the final referent to singular, animate etc. individuals
- (115) The components of *you*:
- a. deictic component: the index is the addressee in *c*
  - b. relational component: restricts the possible relations to those that relate the index to semantic values that the speaker instantiates
  - c. classificatory component: constrains the final referent to singular, animate etc. individuals

Even though the restrictions that are jointly placed on the final semantic contribution of first and second person singular pronouns are quite restrictive, Nunberg's account provides enough freedom and flexibility to derive the impersonal uses. The crucial feature of the account in this respect is the inbuilt mechanism of deferral.

As a starting point, I assume that the components for German first and second person singular pronouns are as specified in (114) and (115). Some adaptations of these specifications will become necessary in the course of the following discussion, though.

As stated above, I adopt Elbourne's (2008) general syntactic structure, and I assume that the values picked by the deictic component and the relational component are attributed as values to the two free variables, *i* and *R*, as well. Since I pursue an analysis of the impersonal uses of first and second person singular pronouns as Heimian indefinites, I adapt Elbourne's structure by replacing the pronominal form by a free variable. This results in the structure in (116), which is assumed to be common to (at least) first and second person singular pronouns in all of their uses.

$$(116) \quad [ x [ R_2 i_1 ] ]$$

$x$  ... free variable contributed by the pronoun

$i$  ... models Nunberg's index

$R$  ... models the contextually determined relation between  $x$  and  $i$

Since I remove the pronominal form, which Elbourne assumes to feature in the underlying complex structure, I have to say something about how I assume pronominal spell-out to work. For the adapted account, I adopt a view on pronominal spell-out similar to that argued for in Kratzer (2009). Following work in Harley and Ritter (2002) and others, Kratzer assumes that the semantic contribution of personal pronouns is built up from featural building blocks, i.e.  $\phi$ -features. The pronominal form itself is not part of the computation, but is only the phonological form chosen at Spell-Out relative to the  $\phi$ -feature composition present in the syntax. For the current proposal, this means that the pronominal form spells out the entire complex structure in (116).

In accordance with the change proposed for the underlying syntactic structure, the semantic type of the variable  $R$  needs to be adjusted, as well. Since the variables  $x$  and  $i$  range over individuals and are therefore expressions of type  $e$ , the relational variable has the semantic type  $\langle e, \langle e, st \rangle \rangle$ . The syntactic structure in (116) is therefore interpreted as in (117).<sup>67</sup>

$$(117) \quad \begin{aligned} & [[ [ x [ R i ] ] ] ]^{g,w,c} = \\ & \llbracket R \rrbracket^{g,w,c} (\llbracket i \rrbracket^{g,w,c}) (\llbracket x \rrbracket^{g,w,c}) = \\ & \lambda w. R(i)(x)(w) \end{aligned}$$

The specific semantic contributions of *ich* or *du* in their various uses depend on the values chosen for  $R$  and  $i$  and the binder of the free variable.

The value for  $i$  is the speaker in  $c$ , i.e.  $c_S$ , in the case of *ich*, and the addressee in  $c$ , i.e.  $c_A$ , in the case of *du*. That is, the values of  $i$  distinguish the two pronominal forms. The different uses of a single pronominal form are distinguished by the different values for  $R$  and the operators binding the free variable  $x$ .

For the impersonal uses, the free variable  $x$  is bound by a generic operator *Gen* at sentence level. Krifka et al. (1995) propose that the generic operator relates two open propositions, which form the *restrictor* and the *scope* (or: *matrix*) of the generic operator. The restrictor specifies which variables are bound by *Gen*, and which are closed existentially, see (118).

$$(118) \quad \begin{aligned} & \text{Gen } [x_1, \dots, x_i; y_1, \dots, y_j] (\text{Restrictor}[x_1, \dots, x_i]; \text{Matrix}[\{x_1\}, \dots, \{x_i\}, y_1, \dots, y_j]) \Leftrightarrow \\ & \text{Gen } [x_1, \dots, x_i]; (\text{Restrictor}[x_1, \dots, x_i]; \exists y_1, \dots, y_j [\text{Matrix}[\{x_1\}, \dots, \{x_i\}, y_1, \dots, y_j]]) \\ & \text{(Krifka et al. 1995:26)} \end{aligned}$$

<sup>67</sup>The values that are contextually determined by the variable assignment  $g$  for  $R$  and  $i$  are again written as  $R$  and  $i$ .

Generic quantification over individuals has been assumed to express universal quantification over normal or typical individuals. For the moment, I adopt this interpretation.<sup>68</sup>

Consider examples (119) and (120)—specifically the material that is translated by the indefinite noun phrase.

- (119) *Ich muss als Fußballnation eine solche Mannschaft dominieren können.*  
 I must as soccer-nation a such team dominate can  
 ‘A (national team of a) soccer nation has to be able to dominate such a team.’<sup>69</sup>
- (120) *Du musst als Mannschaft einfach mehr gewinnen wollen als der*  
 you must as team simply more win want than the  
*Gegner.*  
 opponent  
 ‘A team simply has to want to win more than the opponent.’<sup>70</sup>

These examples show that for the impersonal use, the restrictor of *Gen* contains the expression  $[\lambda w.R(i)(x)(w)]$  contributed by the pronoun, the predication contributed by the associated *als*-phrase, and possibly other non-focused material (cf. Krifka et al. 1995). For a fully specified account, though, the value for *R* and the role of the classificatory component still need to be determined.

The main ingredient in Nunberg’s account of deferred reference is the contextually contributed relation restricted by the relational component. The only restriction Nunberg attributes to the relational component is that the relation needs to be “instantiated” by the index. That is, no matter which value is chosen as the final semantic value for the pronoun, the index has to be in some sense part of its denotation.

Examples (119) and (120) both express generalizations about soccer teams. This means that in both cases, the variable *x* has to range over a set of individuals which contains soccer teams. If this were not the case, the additional restriction introduced via the *als*-phrase, which is also interpreted in the restrictor of *Gen*, would result in the empty set. Hence, the question regarding the value of *R* for (119) and (120) is as follows: Which relations relate the speaker or the addressee to individuals of various forms, including soccer teams, and are instantiated by the speaker or the addressee?

I propose that the value for *R* is an identification relation that relates individuals to sets of individuals with whom they empathize (cf. Moltmann 2006, 2010a). Hence, for the impersonal uses I fix the value for *R* as the following “identifies-with”-relation, which I take to be a semantic primitive.

<sup>68</sup>The semantics of generic sentences and *Gen* is discussed in detail in Chapter 3.

<sup>69</sup><http://www.rp-online.de/public/comments/index/aktuelles/sport/fussball/nationalelf/wm/dfb/744344>

<sup>70</sup><http://www.netzathleten.de/Sportmagazin/Star-Interviews/Interview-mit-Eishockey-Bundestrainer-Uwe-Krupp-Besser-spielen-als-in-Bern/5761358233643659016/head>

(121)  $\lambda y_e. \lambda x_e. \lambda w. \text{identifies-with}(y)(x)(w)$

For this relation, Nunberg’s instantiation requirement holds since every individual can be assumed to stand in an empathic relation to himself. Moreover,  $R$  can be seen as modelling the speaker- and participant-oriented pragmatic effects described in Section 1.4, which are based on the speaker’s and the addressee’s empathy.

I now turn to the classificatory component for the impersonal uses, which has been neglected so far. [Elbourne \(2008\)](#) proposes to model the featural restrictions contributed by the classificatory component as presuppositions on the meaning of the entire complex structure (cf. Section 2.5.2). This fits with Nunberg’s original proposal, who suggests that the classificatory component restricts the final semantic value rather than the value for the index, see (122). Here, a plural demonstrative is accompanied with a gesture to a single sample plate.

(122) In a china shop:

*These are over at the warehouse, but those I have in stock here.*

([Nunberg 1993:24](#))

Similarly in the case of first person plural *we*, the index (i.e. the speaker) is a singular individual, but the classificatory component restricts the final semantic value to pluralities.

For the classificatory component of impersonally used personal pronouns, I need to depart from Nunberg’s original proposal. As discussed in Section 1.2, the impersonal uses are morphologically indistinguishable from their referential uses, and share the same agreement patterns, i.e. they share the same morphosyntactic features. Therefore, I suggest that the classificatory component of *ich* and *du* in all of their uses contains the respective sets of morphosyntactic features ( $\phi$ -features) proposed in [Kratzer \(2009\)](#): the feature set for *ich* is  $\{[1st], [singular]\}$ , the one for *du* is  $\{[2nd], [singular]\}$ . Consider the interpretation proposed for these features in [Kratzer \(2009\)](#).

- (123) a.  $[[[1st]_N]]^{g,w,c} = \text{the speaker(s) of } c$   
 b.  $[[[2nd]_N]]^{g,w,c} = \text{the addressee(s) of } c$   
 c.  $[[[singular]]]^{g,w,c} = \lambda x : x \text{ is an atom. } x$

Since [1st] and [2nd] contribute the speaker and the addressee, respectively, I assume that the classificatory component does not exclusively restrict the final semantic value of a personal pronoun (*pace* Nunberg). In fact, the contributions of the person features, [1st] and [2nd], are the values that Nunberg assigns to the index. I propose, therefore, that the classificatory component depends on the pronoun’s morphosyntactic behavior, and is responsible for restricting both the index (via person features) and the final semantic value (via presuppositional features). Furthermore, the component regulates

morphosyntactic agreement and phonological spell-out. For reasons of space, I leave a detailed proposal for the connection between feature-based theories, like Kratzer (2009), and the account proposed in Nunberg (1993) for further investigation.

So, if only the presuppositional features restrict the overall interpretation of personal pronouns, the truth-conditional contribution for impersonally used first person singular *ich* and second person singular *du* come out as in (124). The schematic proposal for the truth-conditional content of sentences containing impersonally used *ich* and *du*, respectively, are given in (125).<sup>71,72</sup>

- (124) a.  $\llbracket ich \rrbracket^{g,w,c} = \lambda w.\text{identifies-with}(c_S)(x)(w)$ , defined if  $x$  is atomic  
 b.  $\llbracket du \rrbracket^{g,w,c} = \lambda w.\text{identifies-with}(c_A)(x)(w)$ , defined if  $x$  is atomic
- (125) a.  $\text{Gen } [x; ](\text{identifies-with}(c_S)(x) \ \& \ \phi; \ \psi)$   
 ‘All normal individuals who the speaker in  $c$  identifies with, and who are  $\phi$  are  $\psi$ .’  
 b.  $\text{Gen } [x; ](\text{identifies-with}(c_A)(x) \ \& \ \phi; \ \psi)$   
 ‘All normal individuals who the addressee in  $c$  identifies with, and who are  $\phi$  are  $\psi$ .’

In addition to the generic operator *Gen*, adverbs of quantification and the existential quantifier contributed by existential closure (cf. Diesing 1992) can also bind the free variable  $x$  contributed in the pronominal structure. If  $x$  in (124) is bound by an adverb of quantification, the result is a quantificational variability reading.

The referential use—including the deferred reference use—of *ich* and *du* are captured when the variable  $x$  is bound by the existential quantifier contributed by existential closure. The standard referential uses and the deferred reference cases only differ with respect to the value assigned to the relation variable  $R$ .

For the referential use, I follow Elbourne (2008) in assigning the identity relation,  $[\lambda w.\lambda y_e.\lambda x_e.y = x \text{ in } w]$ , to  $R$ . Referentially used *ich* and *du* consequently have the following general structure.<sup>73</sup>

- (126) a. Referential use of *ich*:  $\lambda w.x = c_S \text{ in } w$ , defined if  $x$  is atomic  
 b. Referential use of *du*:  $\lambda w.x = c_A \text{ in } w$ , defined if  $x$  is atomic

The compositional derivation of the truth-conditional content of episodic sentences containing standard referential uses of *ich* and *du* involves two non-standard combinatorial mechanisms: First, because of a type clash, the complex pronominal structure always

<sup>71</sup>To improve readability, presuppositions are not included in a formula whenever possible.

<sup>72</sup>Since so far no compositional account for the meaning of generic sentences exists, no step-by-step derivation of the truth-conditions in (125) will be given.

<sup>73</sup>Note that the referential uses and the deferred ostension readings of personal pronouns in this account come out as quantificational, due to the analysis of personal pronouns as Heimian indefinites. This is one of the flaws of this account that will be discussed below in Section 2.6.

has to be raised. A trace that is co-indexed with the free variable  $x$  is introduced in the position from where the structure is moved, but is crucially not bound by a  $\lambda$ -binder. Second, the open proposition contributed by the pronominal structure and the open proposition resulting from the rest of the sentence are conjoined by a generalized version of predicate modification. The co-indexed variables in the resulting single open proposition are then existentially bound via existential closure at the clause level. This results in the following schematically given truth-conditional content.

$$(127) \quad \begin{array}{l} \text{a. } \lambda w. \exists x [x = c_S \text{ in } w \ \& \ P(x)(w)] \\ \text{b. } \lambda w. \exists x [x = c_A \text{ in } w \ \& \ P(x)(w)] \end{array}$$

Note that referentially used personal pronouns in generic sentences are interpreted in the scope of the generic operator, where they are by default existentially bound, see (118).

The truth-conditional content given in (127) is logically equivalent to the truth-conditional content of sentences in which the first or second person singular pronouns contained in them were interpreted direct-referentially. That is, after evaluating the propositions with respect to the actual world,  $w_0$ , the expression  $\exists x [x = c_S \text{ in } w_0 \ \& \ P(x)(w_0)]$  is equivalent to  $P(c_S)(w_0)$ . This is the case since there is only one individual that is identical to the speaker, and this is the speaker herself. Analogously, the expression  $\exists x [x = c_A \text{ in } w_0 \ \& \ P(x)(w_0)]$  is equivalent to  $P(c_A)(w_0)$ .

The deferred ostension readings are also accounted for if the value of the relational variable  $R$  is a contextually determined relation, other than the identity relation. The schematic truth-conditional content of sentences containing deferred ostension uses of a first person singular pronoun is given in (128).

$$(128) \quad \lambda w. \exists x [R(c_S)(x)(w) \ \& \ P(x)(w)]$$

Depending on the contextual value assigned to  $R$ , different sets of individuals are related to the speaker, and hence different instances of deferred reference arise.

In sum, I propose to model the personal pronouns *ich* and *du* as Heimian indefinites with an underlying structure that was adapted from Elbourne (2008). Conceptually, the account is based on the three-component account proposed in Nunberg (1993). More specifically, I propose that first and second person singular pronouns are expressions that relate an individual variable to the speaker and the hearer, respectively. The different uses of both pronouns arise from different combinations regarding (i) the binder of the individual variable and (ii) the relation assumed to hold between the variable and the speaker/the hearer.

Note that even though the standard referential uses of *ich* and *du* are modelled as existentially quantifying expressions, they are definite in the sense of Abbott (2014) (cf. Section 2.4): they can be only used to refer to a single individual which the addressee

can identify. The same holds for the deferred reference cases, although identifiability depends on the choice of relation. The impersonal uses, however, are decidedly not definite—but see the discussion on the (in)definiteness of noun phrases in generic sentences in Section 2.4.

## 2.6 A critical evaluation of the proposal in 2.5.3

The aims of this section are first to compare the account proposed in Section 2.5.3 to Malamud’s (2006; 2007) account as introduced in Section 2.3, and to then critically evaluate both accounts with respect to their predictions regarding the data. The main problems faced by the account proposed in Section 2.5.3 concern the core ingredient that was used to unify the referential and impersonal uses: the context-dependent relation that links the index and the individual variable introduced by the pronoun.

The comparison to Malamud’s account, I believe, is instructive since, as mentioned in Section 2.5, the two accounts are rather similar on the formal level. Malamud also aims to give a unified account for the impersonal and referential uses, and analyzes *you* as an indefinite expression, as well. The first difference to the account proposed in Section 2.5.3 is that Malamud formalizes *you* as a generalized quantifier with hard-wired existential force, see (129).

$$(129) \quad \llbracket you \rrbracket^{g,w,c} = \lambda s. \lambda P. \exists y [\text{persona}(y)(\text{addressee}(c))(s) \ \& \ P(y)(s)]$$

Since Malamud’s proposal makes *you* similar to existential quantifiers like *someone* (Germ. ‘jemand’), the question arises of how Malamud can account for the differences between these expressions. Note that the behavior of *jemand* (Engl. ‘someone’) described in Section 2.2.3 suggests that its existential force is hard-wired in its lexical entry: (i) it behaves like a quantificational expression with respect to scope taking, and (ii) it cannot co-vary with *Gen* or adverbs of quantification.

For German second person singular *du*, I assume, in contrast, that the pronoun contributes an open proposition of a sort, i.e. a property containing a free variable, see (130).

$$(130) \quad \llbracket du \rrbracket^{g,w,c} = \lambda w. x = c_A \text{ in } w$$

The operator which binds the free variable and contributes its quantificational force is not part of the lexical entry of the pronoun.

Nevertheless, both accounts propose a similar propositional meaning to sentences containing these pronouns. Compare (131) to (132), which contain referential uses of *you* and *du*, respectively.

$$(131) \quad \text{a. } \textit{You burned a house.}$$

- b.  $\lambda s_0. \exists y \exists z [\text{persona}(y)(\text{addressee}(c))(s_0) \ \& \ \text{house}(z)(s_0) \ \& \ \text{burned}(y)(z)(s_0)]$   
 (adapted from Malamud 2007:26)
- (132) a. *Du hast ein Haus angezündet.*  
 you have a house set-on-fire  
 ‘You set a house on fire.’
- b.  $\lambda w. \exists x \exists y [x = c_A \text{ in } w \ \& \ \text{house}(y)(w) \ \& \ \text{set-on-fire}(y)(x)(w)]$

The two accounts also agree with respect to the internal structure of personal pronouns: pronouns contain a relation that links a contextually given individual to a variable. In Malamud’s account this is the *persona*-relation, which occurs in the referential and impersonal uses. In the account proposed in Section 2.5.3, the relation that links the two individual denoting expressions is contextually determined and varies across uses.

For the impersonal uses of second person *you/du*, Malamud’s *persona*-relation plays a similar role to the *identifies-with*-relation proposed above. Both relations take the addressee, and relate her to those individuals that she empathizes/identifies with. In both accounts, this is used to model the participant-related effects observed in Section 1.4.

The accounts crucially differ further with respect to (i) the underspecification of the lexical meanings, and (ii) the interaction between binding operators and the pronominal meaning.

With respect to the first point, the account presented in Section 2.5.3 is less restrictive than the proposal in Malamud (2006, 2007). Since  $R$  is an unrestricted, free variable any contextually given relation—observing certain restrictions—can be assigned to  $R$ . Because of this freedom, the different uses, including the deferred ostension cases—can be derived by assuming different values for  $R$ . Since Malamud models impersonal and referential uses with the same *persona*-relation, this commits her to the assumptions that (i) the different uses solely depend on the different co-occurring operators, and that (ii) the set of people that the addressee empathizes with may vary.<sup>74</sup>

Regarding co-occurring operators, Malamud assumes that they all are quantifiers over situations, and that they do not bind individual variables. That is, the impersonal use and quantificational variability effects are modelled indirectly by quantification over situations (cf. Section 2.3.2).<sup>75</sup> The individual variable  $y$  that is part of the meaning of *you* remains existentially bound in these readings. In contrast, for the account proposed in Section 2.5.3 it is assumed that the generic operator *Gen* and adverbs of quantification bind the free individual variable contributed by the pronoun. If no such

<sup>74</sup>Note, though, that her formal proposal cannot capture any context-dependent variance regarding the set of people the addressee empathizes with; the value of the *persona*-relation only depends on the situation of evaluation.

<sup>75</sup>See von Stechow (2004/1995) and Portner (2009) for a situation semantic account of quantificational variability effects which may be extended to account for generic quantification. Cf. also Krifka et al. (1995) for a situation semantic interpretation of *Gen*.

operator is present, existential closure applies. Table 2.6 schematically summarizes the comparison between the two accounts.

	relation	possible binders of $x$	variables bound by <i>Gen</i> and adverbs of quantification
Malamud (2006, 2007)	<i>persona</i> -relation	existential quantifier $\exists$	situation variable $s$
Section 2.5.3	free variable $R$	<i>Gen</i> , adverbs of quantification, and existential closure $\exists$	individual variable $x$

Table 2.6: Summary: Malamud (2006, 2007) vs. the account in Section 2.5.3

I now turn to issues that arise for the account presented in Section 2.5.3. Given the similarity between this account and Malamud’s (2006; 2007), some of these issues also apply to the latter. This is pointed out at the relevant places. In sum, I present seven points, of which the first five concern the formal specifics of the account, i.e. the complex structure adopted for personal pronouns from Elbourne (2008) and its interpretation, and the last two are general considerations regarding co-occurring operators.

The biggest problem for the account concerns a discussion in Nunberg (1993) on the semantic contribution of indexicals. As argued in Nunberg (1993), first and second person pronouns never contribute descriptive content to the meaning of a sentence (cf. Sections 1.5 and 2.5.1). Both of the accounts compared above contribute descriptive content, and therefore may run into the well-known problems connected to modal operators (cf. Section 2.5.2).

The descriptive content contributed by the pronouns is also the source for the second problem, which arises because the contextually determined relation  $R$  and index  $i$  are part of the asserted, truth-conditional content. This means that they restrict the domain of quantification to the set of individuals the speaker or addressee identifies with for any of the binding operators. Consequently, truth-conditional equivalence between the different impersonal uses cannot be ensured. It is predicted, for instance, that a speaker cannot express the same truth-conditional meaning with two sentences containing distinct impersonally used pronouns. Since the speaker and the addressee may have different sets of people they empathize with, different impersonally used pronouns generalize over possibly different sets of people. In the most extreme cases, the binding operators may even have disjoint domains. This is not reflected in the data, though. As shown in Section 1.2, a speaker may freely switch between different pronominal forms to generalize over the same set of individuals, see (133).

- (133) *Wenn ich als Händler Schrott kaufe, dann muss ich mit so etwas rechnen. [...] Wenn du als Händler von jemanden ein Fahrzeug kaufst und*

*dann weiter verkaufen möchtest, dann musst du den Wagen vorher überprüfen lassen.*

‘If a trader buys trash, he has to expect a situation like this.[...] If a trader buys a vehicle from someone, and he wants to resell it, he has to let it get checked beforehand.’<sup>76</sup>

The third problematic point is that the contextually determined relation  $R$  is an unrestricted free variable, and therefore the variable assignment can in principle assign any relation of the right type to it.<sup>77</sup> In Section 2.5.3, I proposed different values for  $R$  that capture the respective readings of *ich* and *du*. However, at the moment nothing blocks the possibility that the identification relation, which is involved in the impersonal uses, features in deferred reference cases. Similarly, nothing determines that the identity relation is not a possible value for  $R$  in the impersonal uses.

This is clearly a problem of overgeneration, and there are two possible ways to address it: The first option is to say that the unattested combinations mentioned above are not prohibited; they are simply no plausible candidates for the meaning of *ich* and *du*. The second option is to explicitly tie the combinations of values for  $R$  and the necessary operators to the different uses. Both options are not unproblematic. Since both options first need to be worked out further to be discussed in detail, neither will be addressed further in this thesis; the other problems mentioned in this section are, to my mind, already reasons enough to discard this type of account in general.

The fourth and fifth issues are not serious conceptual problems like the first three problems, but counter-intuitive predictions made by the account.

The fourth issue arises because in neither of the accounts compared above, referentially used pronouns are directly-referential expressions. In fact, in the account proposed in Section 2.5.3, referentially used pronouns are analyzed more or less like Russellian definite descriptions. Consider (134), in which the identity statement restricts the domain of possible values for  $x$  to  $c_S$ .

$$(134) \quad \exists x[c_S = x \text{ in } w_0 \ \& \ P(x)(w_0)]$$

As discussed in Section 2.4, Russell’s quantificational proposal for definite descriptions, which *asserts* uniqueness, interacts in an undesirable way with sentential negation. The same is true for the proposal in (134).

$$(135) \quad \begin{aligned} \neg \exists x[c_S = x \text{ in } w_0 \ \& \ P(x)(w_0)] &\Leftrightarrow \\ \forall x \neg [c_S = x \text{ in } w_0 \ \& \ P(x)(w_0)] &\Leftrightarrow \\ \forall x [c_S \neq x \text{ in } w_0 \ \vee \ \neg P(x)(w_0)] & \end{aligned}$$

<sup>76</sup><http://diskussionen.quoka.de/viewtopic.php?t=691>

<sup>77</sup>Besides the instantiation requirement, no other restrictions on the contextually determined relations are discussed in Nunberg’s original account.

It is predicted that a negated sentence containing a referential use of *ich*, for example, asserts that all individuals are such that they are not identical to the speaker, or  $P$  does not hold of them. This makes the counter-intuitive prediction that a sentence like *I don't sleep at the moment* asserts something about other individuals besides the speaker; more specifically, that these individuals are (trivially) not the same person as the speaker. Since the final formula in (135) is equivalent with  $\neg P(c_S)$ , this could be seen as a negligible issue—if one is prepared to accept the conceptually unintuitive consequences. A similar issue was discussed in Section 2.3.2 for Malamud's account.

The fifth issue is that the referential use of personal pronouns is predicted to be a last resort reading. Since the referential use is derived via existential closure of the free variable, it is predicted to arise only if no other quantifier binds the free variable first. This is in conflict with the observation that the referential use is the predominant use of personal pronouns; the impersonal use the special case. As discussed in Section 2.3, this problem also applies to Malamud's (2006; 2007) proposal.

The last two problems—or rather open issues—concern the (expected) interaction between the meanings proposed for personal pronouns and co-occurring operators—independently of the specific internal structure of the pronouns.

First, since personal pronouns are analyzed as Heimian indefinites, it is expected that all operators that can bind a free variable contributed by an indefinite can also bind the variable contributed by personal pronouns. This is borne out for the generic operator, adverbs of quantification, and existential closure. For modal verbs/auxiliaries, the possible interactions still need to be determined.

Second, most recent work on the meaning of generic sentences stresses their intensionality (cf. Krifka et al. 1995): generic sentences do not express accidental generalizations, but general rules, regulations, and norms. To express this type of meaning formally, an account is needed that involves evaluation in a relevant set of possible worlds. For the moment, I adopt the modal interpretation proposed in Krifka et al. (1995), see (136).

- (136)  $\text{Gen}[x_1, \dots, x_i; y_1, \dots, y_j](\text{Restrictor}; \text{Scope})$  is true in  $w$  relative to a modal base  $B_w$  and an ordering source  $\leq_w$  iff:
- $$\forall x_1, \dots, x_i \forall w' \in B_w [\text{Restrictor}(x_1, \dots, x_i)(w') \rightarrow \exists w'' \in B_w [w'' \leq_w w' \& \forall w''' [w''' \leq_w w'' \rightarrow \exists y_i, \dots, y_j [\text{Matrix}(x_1, \dots, x_i, y_1, \dots, y_j)(w''')]]]]$$
- (Krifka et al. 1995:52)

According to this interpretation, the generic operator introduces universal quantification over most normal worlds and over the individuals that exist in these worlds; example (137) paraphrases (136) along these lines.

- (137) In all most normal worlds  $w'$ , all individuals which have the properties in the restrictor in  $w'$  are such that they have the properties in the matrix in  $w'$ .

When the modal interpretation of the generic operator is combined with the meaning for impersonally used personal pronouns proposed in Section 2.5.3, a sentence containing an impersonally used personal pronoun is interpreted as follows (cf. also example (125)).

- (138) In all most normal worlds  $w'$ , all individuals  $x$  for which identifies-with( $i$ )( $x$ ) and  $\phi$  hold in  $w'$  are such that  $\psi$  holds for them in  $w'$ .

For the interpretation of sentences containing an impersonal use, quantification over most normal worlds seems inadequate. According to (136), it is assumed that in the accessible worlds, *all* individuals behave according to the laws and rules under consideration. That is, for generic sentences which express moral rules, for example, the most normal worlds are the morally most conforming worlds. This is too strong, though. Generic sentences containing impersonally used personal pronouns that express moral rules only state that these rules apply to the individuals the generalization is “about”, i.e. only to the domain of the variable contributed by the impersonally interpreted personal pronoun. No specific moral behavior is expected of any of the other entities mentioned in the generalization. Consider (139).

- (139) *Ich kann doch als Brautpaar nicht von meinen Gästen erwarten, dass sie mir quasi die Feier finanzieren!*  
 I can PRT as bridal-couple not from my guests expect that  
 they me more-or-less the party finance  
 ‘A bridal couple can’t expect their guests to more or less pay for the party!’<sup>78</sup>

In example (139), the rule of conduct expressed by the sentence is only stated for bridal couples, but not e.g. for their guests. This is supported by the possibility to continue (139) with (140), in which *sie* (Engl. ‘they’) refers to the guests.

- (140) *Auch, wenn sie normalerweise ihr Geld nur für Schrott ausgeben.*  
 also if they usually their money only for junk spend  
 ‘Even if they usually only spend their money buying junk.’

Therefore, for an adequate formalization of (139), one has to assume a stronger tie between the modal meaning of the generic operator and the contribution of the impersonally used personal pronoun (including the *als*-phrase). The desired result would be that *Gen* picks out only the morally most normal worlds for bridal couples.

In sum, seven issues and problems were identified that need to be addressed and, if possible, solved for the account to adequately capture the data. In Chapter 4, the most radical solution for the first five problems is pursued, i.e. to discard Elbourne’s (2008) syntacticized formalization of Nunberg (1993) altogether. The last two issues,

<sup>78</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

which concern the possible binders and the interpretation of *Gen* are taken up, and discussed in detail in Chapter 3.

## 2.7 Summary

The main result of this section is the unified account proposed in Section 2.5.3. To briefly sum up the cornerstones of the account: It is based on Nunberg (1993), who argues against direct-reference accounts based on the ideas in Kaplan (1978 [1989]), and who proposes a complex three-component account for the meaning of personal pronouns (cf. Section 2.5.1). The specific formalization of the account is based on the formalization in Elbourne (2008), which is inspired by Nunberg’s three-component account. The account also incorporates ideas from previous work on impersonal pronouns (cf. Section 2.2) and on the impersonal uses of second person singular pronouns (cf. Section 2.3).

The interlude in Section 2.4 addressed the tenability of a unified account with respect to the question whether the different uses are unifiable given their (in)definiteness behavior. Together with the list of problems identified in Section 2.6, the results regarding the (in)definiteness problem for personal and impersonal pronouns suggest that a unified semantic account that captures all of their uses based on underspecified lexical entries does not seem to be tenable.

In Chapter 4, I address the impersonal use of *ich* and *du* again, but discard the aim to give a unified account for the two pronouns. Instead I focus on the observation that impersonally used *ich*, *du*, and *man* bring about different pragmatic effects. The aim of Chapter 4 is to account for them in a way that avoids the problems caused by the descriptive content contributed in the accounts presented in this chapter.

In Chapter 3, I now turn to the last two problems discussed in Section 2.6. The main topics that are discussed are (i) whether modals are potential binders for variables introduced by impersonally used pronouns, and (ii) what an adequate modal interpretation for the generic operator *Gen* would look like that involves a more differentiated set of possible worlds.



# Chapter 3

## The impersonal use, modals, and generic sentences

### 3.1 Introduction

Chapters 1 and 2, so far, focussed on empirical observations regarding impersonally used pronouns and various proposals to account for them—some that try to account for only the impersonal uses, and some that try to account for all of the observable uses. In Section 2.6, the unified account proposed in Section 2.5.3 was evaluated, and various issues were identified. Two of these issues concern the intensional sentential contexts in which the impersonal uses occur.

The first issue is connected to the analysis of the personal pronouns *ich* and *du* as Heimian indefinites. It was argued that the free variable contributed by these pronouns can be bound by different operators, depending on the intended interpretation of the pronoun. These binders include the generic operator, adverbs of quantification, and the existential quantifier contributed by existential closure. The first question that this chapter aims to answer is whether other operators that may bind variables contributed by indefinite expressions are also possible binders for the free variable contributed by *ich* and *du*. In particular: Are modals possible binders? This is addressed in Section 3.4.

The second issue concerns an observation regarding the predictions made by the modal interpretation of the generic operator as proposed in Krifka et al. (1995). The account predicts that generalizations that are expressed with impersonally used *ich*, *du*, or *man* demand that *all* individuals denoted by *some* nominal expression in the sentence have to behave in a normal or ideal manner. However, intuitively, the generalizations only require particular normal behavior of those individuals that are denoted by the pronouns. Hence, the second aim of this chapter is to investigate whether alternative semantic accounts for *Gen* exist that can account for the intuitive connection

observed above. In Section 3.3, I introduce and discuss three proposals for a modal interpretation of the generic operator, *Gen*, in detail: Krifka et al. (1995), Drewery (1998), and Greenberg (2007).

These two parts are connected in Section 3.5, where the interaction between modal expressions and *Gen* is investigated for generic sentences in general. Based on this discussion, I propose a two-operator analysis of the intensional sentential context for those impersonally used pronouns that co-occur with overt modals.

The entire formal discussion in this chapter is based on Kratzer’s possible worlds semantic account for German modal verbs and English modal auxiliaries introduced in Section 3.2. Note also that to make matters simpler, it is assumed throughout this chapter that impersonally used pronouns contribute just a simple free individual variable to the truth-conditions of a sentence.

## 3.2 A possible worlds semantics for modality

### 3.2.1 The linguistic category of modality

The intensional sentential context for the impersonal uses of *ich*, *du*, and *man* is mostly induced by “expressions” that are standardly analyzed as modal expressions, i.e. overt modal verbs or a conditional sentence structure.

The aim of this section is to discuss the relevant semantic properties of one of these types of expressions, i.e. English modal auxiliaries and German modal verbs, and to introduce the Kratzerian possible worlds semantic account for these lexical items (Kratzer 1977, 1981a, 1991). The extension of Kratzer’s account to conditional sentences and its connections to a genericity based account of impersonally used pronouns is discussed in Appendix A3. Since a conditional sentence structure adds additional complications from the point of view of modal semantics, Appendix A3 only sketches some first considerations on conditional generics in general, and on conditional generics containing overt modal verbs or auxiliaries in particular.<sup>1</sup>

The notional category of modality in natural language is connected to the ability of humans to talk about situations and circumstances other than the physical context, and to refer to entities that are not present in the here-and-now: i.e. “displacement”.

In the recent literature, two different definitions of modality with respect to displacement are given: von Stechow and Heim (2011) define modality as the expression of displacement along the non-temporal dimension, i.e. when circumstances other than

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<sup>1</sup>Note that there is a vast amount of literature on both the semantics of modals and the interpretation of conditional sentences. It is beyond the scope of this thesis to give a comprehensive survey of the existing research. This section can only provide a brief summary on the topics that are needed for the discussions on modal accounts of genericity in Section 3.3, on modals as binders in Section 3.4, and on the interaction between modality and genericity in Sections 3.5 and Appendix A3.

the here-and-now are addressed, excluding the temporal dimension. In contrast, Portner (2009) defines modality as the expression of displacement in general, including expressions of displacement exclusively along the temporal dimension.

Since Hintikka (1962) and Kripke (1963)<sup>2</sup>, alternative circumstances to the here-and-now, i.e. “how things could be, or could have been different”, are viewed as possible worlds. Possible worlds are fully specified alternatives, which means that for a given possible world and for every sentence, it can be determined whether the sentence is true or false given the circumstances in the world.

Regarding the temporal structure of possible worlds, two prominent views need to be distinguished. According to the first view, possible worlds include all of their “history” and “future”, i.e. all stages of the world at different points in time. This view is usually adopted in the literature on modality (e.g. Kratzer 1977, 1981a, 1991; Portner 2009). According to the second view, a possible world consists of one temporal stage only. In other words, the temporal dimension is seen as an independent, external dimension along which worlds vary. This second view is frequently adopted in the literature on temporal logic and tense in natural language (cf. Mani et al. 2005). Since the problem of the interaction of tense and modality is (mostly) orthogonal to the issues that are addressed in this thesis, I leave aside the temporal dimension completely, and follow the tradition in the literature on modality. For work on the interaction between tense and modality, see e.g. Condoravdi (2002).

Portner (2009) distinguishes three categories of modal expressions found in natural language: (i) sentential modality, (ii) sub-sentential modality, and (iii) discourse modality. In the following discussion, the category of sentential modality is central. It covers modal auxiliaries, modal verbs, modal adverbs, generics, habituals, individual level predicates, conditionals, and covert modality.<sup>3</sup> The overt modal elements that can be found in sentences containing impersonally used *ich*, *du*, and *man* are part of this class of modality. Consider examples (1)–(3).

- (1) *Ich gehe doch als Gast dorthin um einen schönen Abend zu haben und tolle Musik zu hören.*  
 I go PRT as guest there so-that a beautiful evening to have and  
 good music to listen-to  
 ‘A guest goes there to have a nice evening and to listen to good music.’<sup>4</sup>

<sup>2</sup>Hintikka (1962) and Kripke (1963) independently developed their logical systems to address different problems of modal logic. Hintikka discusses possible worlds semantics in the context of epistemic logic. Kripke devised possible worlds semantics as a model for modal propositional logic. The possible worlds interpretation of extension vs. intension is first proposed in Carnap (1947).

<sup>3</sup>Sub-sentential modality involves modal adjectives and nouns, propositional attitude verbs, verbal mood, infinitives, dependent modals, and negative polarity items. Discourse modality, in contrast, covers evidentiality, clause types, performativity, modal subordination. Cf. Portner (2009).

<sup>4</sup>[http://106332.iboos.com/st\\_80.html](http://106332.iboos.com/st_80.html)

- (2) *Ich muss halt als "Allgemeinheit" bereit sein, mir meine Infrastruktur auch etwas kosten zu lassen.*  
 I must PRT as community willing be me my infrastructure also  
 something expense to let  
 'A community has to be willing to pay a certain price for its infrastructure.'<sup>5</sup>
- (3) *Wenn ich als Mannschaft gewinnen will, dann muss ich auch motiviert auf den Platz gehen.*  
 if I as team win want then must I also motivated on  
 the field go  
 'If a team wants to win, they also have to enter the field motivated.'<sup>6</sup>

As (1)–(3) show, impersonal uses are found in mono-clausal sentences with and without overt modal elements, as well as in conditionals with (but also without) an overt modal verb in the consequent.

### 3.2.2 A semantic account for modals

The most prominent analysis of modals that is adopted in the literature is the possible worlds account proposed in Kratzer (1977, 1981a, 1991), and its refinements in subsequent work.<sup>7</sup> Kratzer's proposal is a generalized, context-sensitive version of the Stalnaker/Lewis analysis of modality, which in turn is a generalization of the treatment of necessity and possibility in propositional modal logic (cf. Blackburn et al. 2001).<sup>8</sup>

In propositional modal logic, necessity and possibility are syntactically represented by the logical constants  $\Box$  and  $\Diamond$ . The expressions  $\Box p$  and  $\Diamond p$ , where  $p$  is a proposition symbol, are formulas of propositional modal logic, and express ' $p$  is necessary' and ' $p$  is possible', respectively.

Necessity and possibility are interpreted as quantifiers over possible worlds with respect to a model  $M$ :

$$(4) \quad M = \langle \langle W, R \rangle, V \rangle$$

The pair  $F = \langle W, R \rangle$  is the frame of the model which consists of a set of worlds  $W$  and an accessibility relation  $R$ .<sup>9</sup>  $R \subseteq W \times W$  is a relation between possible worlds: for  $w, w' \in W$ ,  $R(w)(w')$  expresses that  $w'$  is accessible from  $w$ .  $R$  defines a relational structure on  $W$  which determines the type of necessity and possibility that is expressed.

<sup>5</sup>[http://derstandard.at/plink/1226067142914?sap=2&\\_pid=11193953#pid11193953](http://derstandard.at/plink/1226067142914?sap=2&_pid=11193953#pid11193953)

<sup>6</sup>Adapted from [http://www.welt.de/print-welt/article532778/Schlechte\\_Argumente\\_fuer\\_den\\_Aufnahmeantrag\\_an\\_die\\_G\\_14.html](http://www.welt.de/print-welt/article532778/Schlechte_Argumente_fuer_den_Aufnahmeantrag_an_die_G_14.html)

<sup>7</sup>I use "modals" as a cover term for English modal auxiliaries and German modal verbs. In the literature, it is usually assumed that German modal verbs and English modal auxiliaries differ with respect to their syntactic behavior, but not in truth-conditional meaning.

<sup>8</sup>This summary owes a lot to the discussions in Portner (2009) and Hacquard (2011).

<sup>9</sup>The set of worlds  $W$  is sometimes called the set of "indices". In this case, the term "index" is used synonymously to the terms "world" or "world-time-pair". Cf. Lewis (1986).

The valuation function  $V$  assigns denotations to the syntactically well-formed formulae of the logic relative to the frame  $F$  and a distinguished world, the world of evaluation.<sup>10</sup>

Necessity is interpreted as universal quantification, and possibility as existential quantification over the set of worlds that is accessible from the world of evaluation  $w$ . The interpretation of modal formulas of the form  $\Box p$  and  $\Diamond p$  is given in (5).

- (5) a. Necessity:  $V_{M,w}(\Box p) := \forall w' \in W[R(w)(w') \rightarrow p(w')]$   
 b. Possibility:  $V_{M,w}(\Diamond p) := \exists w' \in W[R(w)(w') \ \& \ p(w')]$

The formalization of modality in propositional modal logic is too rigid to model modality as found in natural language. Kratzer (1981a) observes that cross-linguistically, modals express various different types of necessity or possibility.<sup>11</sup>

- (6) a. (In view of the available evidence,) (epistemic)  
*John must/might/may be the murderer.*  
 b. (In view of his parent's orders,) (deontic)  
*John may watch TV, but he must go to bed at 8pm.*  
 c. (In view of his physical abilities,) (ability)  
*John can lift 200 lbs.*  
 d. (In view of his goal to get a PhD,) (teleological)  
*John must write a dissertation.*  
 e. (In view of his desire to retire at age 50,) (bouletic)  
*John should work hard now.*  
 (Hacquard 2011:1485)

The same multiplicity of interpretation is also observed for German modal verbs. The following sentences are direct translations of the English examples above.<sup>12</sup>

- (7) a. *Hans muss/kann der Mörder sein.* (epistemic)  
 Hans must/may the murderer be  
 b. *Hans kann/darf fernsehen, aber er muss um 8 ins Bett gehen.* (deontic)  
 Hans may watch-TV but he must at 8 to-bed go  
 c. *Hans kann 100kg heben.* (ability)  
 Hans can 100kg lift

<sup>10</sup>The typical world of evaluation is also called the “actual world” in the linguistic and philosophical literature since usually the truth of sentences in the discourse situation, which is part of the actual circumstances, is at issue. I use the more general term “world of evaluation” in the course of this chapter.

<sup>11</sup>Nauze (2008), however, argues that this multiplicity in interpretation for English modal auxiliaries is in fact a cross-linguistic exception.

<sup>12</sup>Note that in general, modals are restricted with respect to the types of necessity or possibility that they can express. For instance, German *dürfen* only allows a limited range of non-epistemic interpretations.

- d. *Hans muss eine Dissertation schreiben.* (teleological)  
 Hans must a dissertation write
- e. *Hans muss jetzt hart arbeiten.* (bouletic)  
 Hans should now hard work

Kratzer argues that this systematic ambiguity found with the interpretation of modals is the result of an underspecified, context-dependent semantics, rather than of lexical ambiguity. This is the core observation, which is reflected dominantly in Kratzer's account. She assumes that the meaning of modals is determined by three parts: the *modal force*, the choice of *modal base*, and the choice of *ordering source*. The modal force may either be existential or universal quantification over worlds, and is the only part that is hard-wired in the lexical entry of the modal.<sup>13</sup> With respect to the modal base and the ordering source, the lexical entries are crucially underspecified—both are modelled as free variables. The values for variables that model the modal base, *f*, and the ordering source, *g*, can be determined either overtly, e.g. by an *in view of* phrase, or contextually.<sup>14</sup> The values assigned to *f* and *g* are relations between worlds and sets of propositions (i.e. sets of sets of worlds), called conversational backgrounds.

Accessibility in Kratzer's doubly relative system is defined via the parameters *f* and *g*. The idea is to split up the job of the accessibility relation *R* in propositional modal logic among these two parameters, see (8).

- (8) A world *w'* is accessible from the world of evaluation *w* iff it is a member of the modal base *f* that is optimal relative to the ordering induced by the ordering source *g*.

This definition of accessible worlds as such does not guarantee that a set of accessible worlds exists when a modal proposition is interpreted relative to an infinite set of possible worlds *W*. For example, an infinite sequence of worlds may arise in which there is always a world that is minimally better with respect to the ordering than the previous world in the sequence. To avoid this complication, the so-called *limit assumption* in (9) is made.

- (9) *Limit assumption:*  
 For every infinite sequence of possible worlds, there is a set of possible worlds that constitutes the limit of the sequence, i.e. for every set *A* of possible worlds there is a determinable set of optimal worlds with respect to a given ordering source *g(w)*.<sup>15</sup>

<sup>13</sup>But see discussions on modals with apparent variable modal force, e.g. Rullmann et al. (2008).

<sup>14</sup>The modal parameters are set in a sans serif font to set the symbol for the ordering source parameter, *g*, apart from the symbol used for the assignment function *g*.

<sup>15</sup>The limit assumption was first formulated and argued against in Lewis (1973). It is defended e.g. in Stalnaker (1979).

Since the question of the existence of a set of optimal worlds is independent of the material that is addressed in this thesis, I simply follow other researchers in the field, and assume the limit assumption.

The modal base  $f$  assigns a set of propositions  $f(w)$  to the world of evaluation  $w$ . This set is used to determine the set of worlds in which all propositions in  $f(w)$  are true.

- (10) Set of worlds determined by the modal base  $f$ :  $\cap f(w)$   
(Kratzer 1991:644)

The idea behind the modal base is that it provides the set of relevant facts or background assumptions that are considered when determining the truth or falsity of the modal statement. Kratzer assumes that two types of modal bases are found in natural language: *epistemic modal bases*, which consider a body of knowledge (typically the speaker's knowledge state), and *circumstantial modal bases*, which contribute a set of relevant facts that hold in the world of evaluation.<sup>16</sup>

The ordering source  $g$  also assigns a set of propositions  $g(w)$  to the world of evaluation  $w$ . This set of propositions induces an ordering,  $\leq_{g(w)}$ , on a set of worlds, as defined in (11).

- (11) Ordering  $\leq_{g(w)}$ :  
Let  $g$  be a conversational background,  $g(w) \subseteq \mathcal{P}(\mathcal{P}(W))$ , and  $u, z \in W$  then  
 $u \leq_{g(w)} z : \Leftrightarrow \{p : p \in g(w) \ \& \ z \in p\} \subseteq \{p : p \in g(w) \ \& \ u \in p\}$   
(Kratzer 1991:644)

The ordering,  $\leq_{g(w)}$ , is used to determine the set of optimal worlds in the set of worlds picked out by the modal base,  $\cap f(w)$ . These are the worlds in  $\cap f(w)$  in which the most propositions in  $g(w)$  are true, i.e. the minimal elements in  $\cap f(w)$  with respect to  $\leq_{g(w)}$ .

Conceptually, the ordering source is the subset of relevant criteria that are considered to be relevant or ideal regarding the truth or falsity of a modal statement. Examples of ordering sources are *deontic* (regarding laws, rules, and regulations), *bouletic* (regarding wishes), *teleological* (regarding aims), and *stereotypical* (regarding the most normal course of events) conversational backgrounds.

The modal auxiliaries *must* and *can*, as well as the German modal verbs *müssen* and *können* are analyzed as expressing universal and existential quantification, respectively, over the set of those worlds that are accessible from the world of evaluation  $w$  (cf. Kratzer 1991). To refer to the set of optimal worlds accessible from  $w$  with respect to

<sup>16</sup>Kratzer (2012) seems to give up on this distinction, however.

a modal base  $f$  and ordering source  $g$ , I adopt the notation  $O(f, g, w)$  from Kaufmann (2012:84).<sup>17</sup>

Hence, lexical entries English *must* and *can* and German *müssen* and *können* are as defined in (12).

- (12) a.  $\llbracket \textit{must/müssen} \rrbracket^{c,g,w} = \lambda p_{\langle s,t \rangle} . \forall w' \in O(f, g, w)[p(w')]$   
 b.  $\llbracket \textit{can/können} \rrbracket^{c,g,w} = \lambda p_{\langle s,t \rangle} . \exists w' \in O(f, g, w)[p(w')]$

The dependence on the world of evaluation is necessary to model the contingency of modal statements. If the values for the modal base and the ordering source were independent of the world of evaluation, and were constant for all possible worlds, modal statements would be either true for all possible circumstances, or false for all possible circumstances.

As stated above, the specific interpretation of modals depends on the interplay between the modal base and the ordering source, which are both contextually determined. In the formalization above, no formal connection is made between the choice of conversational backgrounds for the modal base and the ordering source. Empirically, however, constraints on the choice of ordering source for a given modal base can be determined (cf. Kratzer 1991, 2012). Epistemic modal bases only seem to occur with information-related ordering sources. These are conversational backgrounds that concern (i) the normal course of events, (ii) reports, (iii) beliefs, or (iv) rumors. Circumstantial modal bases, in contrast, seem to combine with ideal-based ordering sources, i.e. deontic, bouletic, or teleological conversational backgrounds, but they also combine with the empty ordering source to model “pure circumstantial” modals.

Modals and their interpretations can be grouped with respect to different classification criteria. The most common classification discussed in the literature is the split of modal meanings into *epistemic* and *root* modality. As introduced above, epistemic modality expresses modality connected to (the speaker’s) knowledge, cf. (6-a). Root modality is defined negatively as the cover term for all modal interpretations that are not epistemic, e.g. deontic, ability, teleological, and bouletic modality. See (6-b)–(6-e).

This split is motivated by the different behavior of epistemic modals and root-class modals regarding their scope behavior with respect to (i) quantificational subjects, (ii) other epistemic and root modals, and (iii) sentential negation (cf. Brennan 1993).<sup>18</sup>

First, epistemic modals usually have high scope relative to quantificational subjects, root modals scope under them. This observation explains the following contrast.

<sup>17</sup>There is no standard notation in the literature. For example, Hacquard (2011) uses the notation  $\text{Best}_{g(w)}(\cap f(w))$ , and Portner (2009)  $\text{BEST}(f(w), g(w))$ .

<sup>18</sup>Hacquard (2011) addresses an additional aspect which she calls “temporal relativity”. Temporal relativity concerns the question whether tense provides the time of evaluation for the modal, i.e. the point in time for which the necessity or possibility is stated. For root modals, the time of evaluation is the reference time determined by tense. Epistemic modals, in contrast, are always interpreted with respect to the utterance time. For details see Hacquard (2011).

- (13) a. *Every radio may get these stations and no radio may get these stations.*  
 (epistemic *may*)  
 b. #*Every radio can get these stations and no radio can get these stations.*  
 (root *can*)  
 (shortened from [Bremnan 1993:93](#))

Only if the quantificational subject has scope under the possibility modal, the conjoined sentences are inconsistent. This is the case with root modals, but not with epistemic modals.

Second, a preferred stacking order for modals with different interpretations can be observed. The usual ordering for epistemic modals and root modals is for the epistemic modals to outscope the root modals. This has been seen as indication that epistemic modals occur higher up in the syntactic structure than root modals. Consider example (14).

- (14) *John may have to watch TV.*  
 ([Hacquard 2011:1496](#))

The sentence can only be understood as: ‘Given what the speaker knows, it is possible that John has the obligation to watch TV’. That is, *may* is interpreted epistemically, and *have to* is interpreted deontically. The same is true for the corresponding German example in (15).

- (15) *Hans kann Germany’s Next Topmodel schauen müssen.*  
 Hans can Germany’s-Next-Topmodel watch must  
 ‘It is possible that Hans has to watch Germany’s Next Topmodel.’

However, [Kratzer \(1977\)](#) claims that German also allows for root modals to outscope epistemic modals. She gives the following example.

- (16) *Und auch in Zukunft muß diese Schnecke im Hinblick auf alle mir zu*  
 and also hereafter must this snail with-regard-to all me to  
*Augen oder Ohren kommenden Informationen Saugfüße haben*  
 eyes or ears coming pieces-of-information suction-feet have  
*können.*  
 can  
 ‘And also hereafter, it must be the case that this snail can have suction feet in view of all information I receive.’

For English, the ordering restriction seems to hold for all pairs of modal auxiliaries. Modal adverbs and periphrastics, however, may occur in either order. In example (17), it is possible to interpret the higher scoping *has to* deontically, and *be possible* epistemically.

(17) *For the test costs to be reimbursed, it has to be possible that the patient has Alzheimer's.*

(Hacquard 2011:1496 citing lecture notes of von Stechow and Iatridou)

Third, epistemic modals tend to scope above sentential negation, root modals below negation.<sup>19</sup> Consider the disambiguating continuations in (18) and (19).

(18) *John may not watch TV ...*

a. ... *he never knows any celebrity gossip.* epistemic: *may* > negation

b. ... *his dad is very strict.* deontic: negation > *may*

(Hacquard 2011:1500)

(19) *Hans kann nicht Germany's Next Topmodel schauen.*

Hans can not Germany's-Next-Topmodel watch

a. He never knows any of the results. epistemic: *kann* > negation

b. His father doesn't like reality shows. deontic: negation > *kann*

However, for both types of modals, examples with the reverse scope order can also be found. See Ehrlich (2001) for a discussion on the interaction between German modals and negation.

The difference in behavior for root and epistemic modality challenges the unified semantic account proposed by Kratzer. Consequently, analyses of the data that aim to maintain Kratzer's account (cf. Cinque 1999; Brennan 1993; Hacquard 2006), as well as analyses that modify it according to the root vs. epistemic distinction have been proposed (cf. Brennan 1993; Nauze 2008).

A classification of modal interpretations that is more fine-grained than the epistemic vs. root distinction is proposed in Portner (2009). He distinguishes three classes of modal meanings based on the type of accessibility relations: (i) "epistemic", (ii) "priority", and (iii) "dynamic" modality.<sup>20</sup>

The class of priority modals contains deontic, bouletic, and teleological modal interpretations. These modals involve a circumstantial modal base and an ordering source based on some individual's priorities.

The class of dynamic modality is further split up into "volitional" and "quantificational"<sup>21</sup> modals. Like priority modals, dynamic modals have a circumstantial modal base. Volitional modal interpretations cover ability, opportunity, and dispositional

<sup>19</sup>Drubig (2001) claims that epistemic modals always scope above sentential negation. This is challenged in von Stechow and Iatridou (2003).

<sup>20</sup>A discussion of the different classifications of modal meanings proposed in the literature can be found in Portner (2009).

<sup>21</sup>This term was introduced in Carlson (1977). As Portner (2009) argues, to name a subclass of modals "quantificational" is confusing since according to Kratzer's analysis, all modals are quantifiers over possible worlds. In this case "quantificational" refers to quantification over individuals.

readings. They express how the circumstances affect the actions of a volitional agent. Examples for the latter two readings are given in (20).

- (20) a. *You can see the ocean from here.* (opportunity)  
 b. *Mary will laugh if you tell her that.* (dispositional)  
 (Portner 2009:135)

Quantificational modals differ greatly from all other modal interpretations: they show quantificational variability effects with indefinite expressions (cf. Brennan 1993, 1997). These are illustrated in (21).

- (21) a. *A spider can be dangerous.* ~ ‘Some spiders are dangerous.’  
 b. *A spider will be dangerous.* ~ ‘All spiders are dangerous.’  
 (Portner 2009:136)

For the remainder of this thesis, I adopt the possible worlds account for modal meanings as proposed by Kratzer (1977, 1981a, 1991), and the classification proposed in Portner (2009). In Section 3.4, the class of quantificational modals and the quantificational variability effects that they induce are discussed further. This discussion forms the basis for the subsequent investigation of the interaction between the generic operator and overt modals in Section 3.5.

### 3.3 Modal accounts of genericity

#### 3.3.1 Preliminaries on genericity and generic sentences

In the data discussion in Section 1.2, it was shown that sentences containing impersonally interpreted *ich* and *du* express rules, norms, and other generalizations of various kinds, i.e. that they are generic sentences. The proposal put forth in Section 2.5.3 accounts for this observation as follows: it was assumed that impersonally used *ich* and *du* contribute, among other material, a free variable which is bound by the generic operator *Gen* at sentence level. To determine the predictions made by the proposal, I adopted the modal interpretation for *Gen* proposed in Krifka et al. (1995). One of the results of Section 2.6 was that sentences containing impersonal uses of *ich* and *du* express norms, rules, or—in general—generalizations only for those individuals that are denoted by the material in the restrictor of *Gen*. No specific behavior is demanded from, or attributed to individuals denoted by other noun phrases that occur in these sentences. Since the modal interpretation proposed in Krifka et al. (1995) does not differentiate between individuals for which the regularity is stated and other individuals, it cannot capture this observation.

In this section, I first discuss the modal proposal put forth in Krifka et al. (1995)

in detail to determine how the undesirable behavior arises. Then I introduce two other modal accounts proposed in [Drewery \(1998\)](#) and [Greenberg \(2007\)](#), and discuss their problems and merits. The central aim is to find a modal account for generic sentences which captures the observation above, and which can be taken as the basis for the investigation of the intensional sentential contexts of the impersonal readings in Sections 3.4, 3.5, and Appendix A3.

Before a detailed discussion of [Krifka et al. \(1995\)](#), [Drewery \(1998\)](#), and [Greenberg \(2007\)](#) is given in Sections 3.3.2 to 3.3.4, the notion of genericity as such and the characterizing properties of generic sentences are introduced.

The notion of genericity concerns the linguistic means to express lawlike generalizations or regularities, and their semantic interpretation. Generic sentences express a non-accidental connection between the individual(s) denoted by (usually) the subject of the sentence and the property denoted by the verb. The type of non-accidental connection is not uniform for all generic sentences, and can come in various forms and flavors, as illustrated in (22).

- (22) a. *Glass breaks easily.* (disposition)  
 b. *Bishops move diagonally.* (rule of a game)  
 c. *Robert works for the government.* (occupation)  
 d. *Soap is used to remove dirt.* (function)  
 e. *A wise man listens more than he speaks.* (moral injunction)  
 ([Carlson 2005:19](#))

The lawlike generalizations expressed by “generic statements” stand in opposition to “episodic statements”, which describe specific circumstances or events. See the examples in (23).<sup>22</sup>

- (23) a. *Mary ate oatmeal for breakfast this morning.*  
 b. *Mary and George ate oatmeal for breakfast this morning.*  
 c. *Each student in the class handed in a completed assignment.*  
[Carlson \(2005:18\)](#)

As the examples above show, episodic statements describe single or multiple, but crucially specific events involving one or more individuals. Hence, the communication of an underlying “non-accidental, lawlike regularity” that holds independently of the actual circumstances is the central, distinguishing factor for episodic vs. generic sentences. This insight is already found in [Dahl \(1975\)](#), who identifies the underlying regularity that accompanies generic statements as the central, intensional component involved in genericity, which is absent in episodic statements. This, however, does not mean

<sup>22</sup>[Krifka et al. \(1995\)](#) call sentences that express episodic statements “particular sentences”.

that episodic statements cannot express generalizations. For instance, example (24) expresses a generalization over students.

(24) *All students in my class are wearing a t-shirt today.*

However, the generalization expressed in (24) is an “accidental generalization”. Generalizations of this kind express circumstances which happen to hold for the totality of a particular group of individuals in one particular world. In contrast to lawlike generalizations expressed by generic sentences, the circumstances need not be the result of an underlying regularity, though. An accidental generalization can have come about completely by coincidence.<sup>23</sup> Similarly, a sentence can contain intensional expressions (e.g. overt modals), and still express an episodic statement, see (25).

(25) *Today, Peter had to sneeze ten times.*

One of the challenges for a linguistic analysis is that genericity is not expressed uniformly by a single linguistic form or specific morphological element.

In the literature, the different types of generic sentences are distinguished with respect to the status, morphological make up, and denotation of the noun phrase in subject position. At least for German and English, (i) kind denoting noun phrases and (ii) non-kind denoting noun phrases that are interpreted differently in generic and episodic sentences need to be distinguished from (iii) nominal expressions that do not fall in either class (i) or (ii). Expressions of class (iii) are interpreted the same in episodic and generic sentences. Consider the bold face expressions in (26).

- (26) a. ***Dodos*** are extinct. (kind-denoting)  
 b. ***The dodo*** is extinct. (kind-denoting)  
 c. ***Lions*** are dangerous. (non-kind-denoting)  
 d. ***A lion*** is dangerous. (non-kind-denoting)  
 e. ***Peter*** eats oatmeal for breakfast. (other)

The dodo sentences in (26-a) and (26-b) illustrate a form of generic sentence which involves “kind predication” rather than “object predication”.<sup>24</sup> That is, the property of being extinct is not attributed to individual dodos, but to the entire kind *dodo*. Note that kind-denoting noun phrases that occur in generic sentences are sometimes called “generic noun phrases”.

<sup>23</sup>In English and German, accidental generalizations are typically expressed with overt nominal quantifiers.

<sup>24</sup>The terms “kind predication” and “object predication” are taken from Krifka et al. (1995). Kind-predication differs from object predication in two respects: (i) the noun phrase in subject position denotes a kind entity, and (ii) the matrix predicate is ascribed to the kind entity as a whole. In generic sentences involving object-predication, the entities denoted by the noun phrase in subject position are quantified over, but considered individually with respect to the matrix predicate. For the general difference between individuals and kinds, see Carlson (1977).

For examples like (26-c), (26-d), and (26-e), Krifka et al. (1995) introduce the terms “characterizing sentences”, “generic sentences”, and “habitual sentences” as interchangeable names.<sup>25</sup> In contrast to examples (26-a) and (26-b), characterizing/generic/habitual sentences involve object predication. In recent work, Greenberg (2007) also further explicitly distinguishes “bare plural generic sentences” as in (26-c) and “indefinite singular generic sentences” as in (26-d).

Characterizing sentences can be further subclassified with respect to different combinations of types of noun phrases and types of predicates; depending on the “ingredients”, different intuitions regarding the domain of generalization arise. Regarding noun phrases in subject position, indefinite singular noun phrases and bare plural noun phrases pattern together, and form the class of “unspecific noun phrases”. They need to be distinguished from all other nominal expressions, i.e. “specific noun phrases”. Regarding the type of predicates, “individual level predicates” (ILP) have to be distinguished from “stage level predicates” (SLP).<sup>26</sup> Consider the combinations in (27).

- |      |    |  |                   |
|------|----|--|-------------------|
| (27) | a. | <i>Peter is intelligent.</i>               | (specific; ILP)   |
|      | b. | <i>Peter eats oatmeal for breakfast.</i>   | (specific; SLP)   |
|      | c. | <i>Students are intelligent.</i>           | (unspecific; ILP) |
|      | d. | <i>Students eat oatmeal for breakfast.</i> | (unspecific; SLP) |

“Unspecific noun phrases” and stage level predicates both provide bases for generalization. For generic sentences that contain stage level predicates, the intuition is that the generic operator generalizes over situations that fit the verb denotation. For instance, (27-b) expresses a regularity regarding Peter’s breakfast situations. “Unspecific noun phrases”, in contrast, are associated with generalizations over the set of individuals that fit the descriptive content of the noun phrase. For instance, (27-c) expresses a generalization about students, and conveys that they are intelligent.

In case an unspecific noun phrase and a stage level predicate co-occur, both domains for generalization are available, and may be generalized over. This is indeed observable in (27-d) where a regularity regarding breakfast situations for students in general is expressed.

The status of the last combination exemplified in example (27-a) as a generic sentence is controversial. Chierchia (1995a) investigates the behavior of individual level

<sup>25</sup>The terminology introduced in this section is not used uniformly in this way in the literature. The use of the terms “generic sentences” and “habitual sentences” in this thesis complies more or less with the use in the formal semantic literature on genericity. In some traditions, generic sentences are seen as special cases of habitual sentences; in other traditions, the term “generic sentences” is used to denote the basic concept from which “habitual sentences” are derived.

<sup>26</sup>Individual level predicates express a more or less permanent property, while stage level predicates are typically transitory properties of individuals (Carlson 1977; Kratzer 1995). For example, *be intelligent* and *have brown hair* are individual level predicates, while *eat an apple* and *sit on a chair* are considered stage level predicates.

predicates in comparison with stage level predicates in generic sentences, and proposes that individual level predicates are inherently generic. In other works, this combination is analyzed along different lines. For instance, [Kratzer \(1995\)](#) proposes a Davidsonian account of the formal difference between individual level and stage level predicates.

Stage level predicates in generic sentences have another interesting property. They allow for three different readings: (i) a dispositional, (ii) a universal, and (iii) a “habitual” reading.<sup>27</sup>

- (28) *John drinks beer.*
- a. *John does not object to drinking beer.* (dispositional)
  - b. *Whenever John drinks something, it is beer.* (universal)
  - c. *John has the habit of drinking beer.* (habitual)
- ([Krifka et al. 1995:41f](#))

[Krifka et al. \(1995\)](#) argue that the three readings arise from generalizations over different types of situations. In the dispositional reading, the sentence expresses a generalization about situations that contain John and a beer. In the universal reading, the generalization covers situations in which John drinks something, and in the habitual reading a generalization about situations containing just John is expressed. Notably, a similar parallel for generic quantification over individuals is not observed.

One further classification for generic sentences is proposed in [Dahl \(1975\)](#). He distinguishes between “descriptive lawlike statements” stating e.g. physical or biological laws, and “normative lawlike statements” involving e.g. social norms, moral norms, customs, or regulations. He observes that the norms in normative statements may be broken, but that the laws in descriptive statements cannot.

I now turn to the characteristic semantic properties of generic sentences. For reasons of space, only generic sentences that parallel sentences containing impersonally used pronouns are discussed further. These are characterizing sentences that contain bare plural and indefinite singular noun phrases (cf. [Section 2.2.1](#)). Therefore, the term “generic sentences” is henceforth used restricted to characterizing sentences of this kind. Note, though, that some of the properties that are discussed in the rest of this section may also hold for those types of generic sentences that are left aside.

The two defining properties of generic sentences are that they allow for exceptions, and that they support inferences to appropriate counterfactuals. Both properties are connected to the basic observation that generic statements involve a non-accidental, lawlike regularity which holds independently of the actual circumstances. In other words, they are connected to the intensional component proposed by [Dahl \(1975\)](#).

The property of allowing for exceptions is discussed on the basis of example (29).

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<sup>27</sup>Here, “habitual” is not used as a technical term, but to convey that a sentence talks about a person’s habit.

- (29) a. *Lions have four legs.*  
 b. *A lion has four legs.*

The generalization expressed by the sentences in (29) is valid in the world of evaluation given that the genetic make-up of lions determines that they have four legs. Assume that there is a specific lion, Paul, who lost one of his legs in an accident. The existence of this single, three-legged lion does not invalidate the generalization about lions expressed in (29). Three-legged Paul has a special status, though: he is seen as a legitimate exception to the rule. Specifically, it can be said that having lost his leg e.g. when he was run over by a car makes Paul an exceptional lion with respect to having four legs.

On the basis of this observation, Dahl's (1975) characterization of descriptive and normative generic sentences needs to be reconsidered. In some sense, Paul the lion does not conform to the rule of having four legs for lions. Because he counts as an exception to the rule, however, he does not *break* the biological law in the same way as a true counterexample would. So, exceptions need to be distinguished explicitly from counterexamples, and Dahl's classification needs to be rephrased: It is possible to find true counterexamples to norms in normative lawlike statements, i.e. individuals which do not adhere to the norms even though they cannot be considered exceptions. For descriptive lawlike statements, in contrast, no such individuals can be found. This means that all individuals that do not adhere to descriptive laws are considered exceptions for some reason or another.

The second characterizing property of generic sentences is to support inferences to appropriate counterfactual sentences.<sup>28</sup> This means that it is possible to defeasibly derive statements about specific individuals from a generalization expressed by a generic sentence. The inference is defeasible because generics allow for exceptions, i.e. the generalization may only be applied to individuals that are judged to be putatively non-exceptional. For example, a speaker may use the generalization about lions in (29) to defeasibly infer the statement in (30) about herself—under the assumption that if she were a lion, she would be a non-exceptional lion.

- (30) *If I were a lion, I would have four legs.*

Famously, there are examples like (31) that seem to pose a problem for the support of appropriate counterfactuals as a general property of generic sentences.<sup>29</sup>

- (31) *Dutchmen are good sailors.*

The observation is that the counterfactual statement in (32), formed in analogy to the

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<sup>28</sup>Dahl (1975) also adds the property of supporting future-oriented predictions, as illustrated in (i).

(i) *Farmers milk cows. Thus, if I become a farmer, I will milk cows.*

<sup>29</sup>This observation is known in the literature as the "Port-Royal Puzzle".

counterfactual in (30) for (29), does not follow from the generalization expressed in (31)—even if the speaker assumes that she would be a non-exceptional Dutchman.

(32) *If I were a Dutchman, I would be a good sailor.*

Intuitively, however, example (31) is different from (29) in that it does not express a generalization about Dutchmen as such—as expected from the noun phrase in subject position—but about Dutchmen that are sailors. That is, the property of being a sailor, which is part of the denotation of the predicate *be a good sailor*, is understood as restricting the denotation of the noun phrase *Dutchmen*. If that is indeed the case, it is expected that the counterfactual statement in (33) is supported. This is indeed borne out.

(33) *If I were a Dutch sailor, I would be a good sailor.*

With respect to example (31), a first difference between bare plural generic sentences and indefinite singular generic sentences can be observed: this exceptional behavior is not observed for the corresponding indefinite singular generic sentence in (34). This version can only be interpreted as expressing that Dutchmen in general are good sailors.

(34) *A Dutchman is a good sailor.*

Given this difference between the bare plural and the indefinite singular versions, Krifka et al. (1995) argue that the bare plural *Dutchmen* is in fact interpreted as kind-denoting. That is, (31) is predicted to pattern with (35).

(35) *The Dutchman is a good sailor*

Krifka et al. argue that this is borne out: (35) also expresses a statement for Dutchmen that are sailors. Hence, for the type of generic sentences that this thesis is concerned with, the properties of allowing for exceptions and of supporting inferences to appropriate counterfactual sentences seem to apply without exceptions, and without any special cases.

The two characterizing properties distinguish generic sentences from sentences expressing accidental generalizations. Consider the following scenario: in the actual world, lions are almost extinct, and the remaining four lions all lost one limb in an accident. In this scenario, (36) is true.

(36) *All lions have three legs.*

If it is assumed that there is no rule requiring that “accidents” involving lions’ legs happen, one should judge (36) as an accidental generalization. Even though all lions that are still alive have only three legs, one would not want to claim that three-leggedness is a general property of lions. All living lions simply happen to be exceptions to the

regularity expressed in (26-c). Hence, while the accidental generalization in (36) is true in the given scenario, the corresponding generic statement in (37) is judged false.

(37) *Lions have three legs.*

Furthermore, (36) also does not support inferences to appropriate counterfactuals. This is illustrated in (38).

(38) *All lions have three legs. #Therefore, if I were a lion, I would have three legs.*

An important fact about generic sentences that follows from this discussion is that generic sentences can be used to make lawlike statements that are true with respect to the actual world even if there are no actual individuals that instantiate the rule.

I now turn to review three modal accounts for the meaning of generic sentences: Krifka et al. (1995), Drewery (1998), and Greenberg (2007). As stated in the beginning of this section, the aim is to find a modal account which provides an adequate basis for the discussion of the intensional sentential context found with impersonally used personal pronouns. Specifically, an account is needed that captures the connection between the individuals that the generalization is about and the relevant accessible worlds (cf. Section 2.6).

### 3.3.2 Krifka et al. (1995)

In the semantic literature, the special lawlikeness associated with generic sentences is modelled by assuming a covert generic operator, *Gen*, which, among other things, contributes an intensional meaning component.<sup>30</sup> The consensus in the literature is that *Gen* is a relational operator, similar to a covert adverb of quantification, which expresses a relation between its restrictor and its scope.<sup>31</sup>

Krifka et al. (1995) introduce the general structure for the dyadic generic operator *Gen* in (39).

(39)  $\text{Gen}[x_1, \dots, x_i; y_1, \dots, y_j](\text{Restrictor}; \text{Scope})$   
(Krifka et al. 1995:26)

The variables  $x_1, \dots, x_i, y_1, \dots, y_j$  in the bracket after the generic operator *Gen* are the list of all free variables that occur in the restrictor and the scope of the generic operator. By convention, the variables  $x_1, \dots, x_i$  in front of the semicolon are interpreted as

<sup>30</sup>An alternative formalization, which is based on treatments of rules in the literature on artificial intelligence, models generic sentences as expressing defeasible inferences in default logics. Cf. Asher and Pelletier (1996). For a modal account of generic sentences which replicates the properties of these extensional systems see Eckardt (2000).

<sup>31</sup>Carlson (1977) analyzes all types of generic sentences as predication over kinds. For reasons of space, this alternative proposal will not be discussed. For a detailed discussion and comparison with the modal relational analysis, see Condoravdi (1994).

bound by *Gen*. The variables  $y_1, \dots, y_j$ , on the other hand, occur only in the scope of the operator, and are interpreted as existentially bound.

In the semantic literature on generic sentences, indefinite singular noun phrases and bare plural noun phrases are assumed to be Heimian indefinites, i.e. expressions that contribute free variables which are either bound by appropriate operators or via existential closure. Hence, the definition in (39) has to be read as follows: only in case the variable contributed by an indefinite expression is bound by the generic operator, the descriptive content of the indefinite is interpreted in the restrictor of the operator. Descriptive material belonging to individual variables that are bound by the existential quantifier is interpreted in the scope of *Gen*. The same distribution also applies to situation variables and any descriptive content depending on them.

The distribution of variables across the restrictor and the scope captures the behavior of indefinite expressions in generic sentences. Consider (40-a) and its formalization in (40-b).

- (40) a. *Professors usually have a cup of tea after lunch.*  
 b.  $\text{Gen}[x; y](\text{professor}(x); \text{cup-of-tea}(y) \ \& \ \text{has}(y)(x))$

Since the variable  $x$  that is contributed by the bare plural is bound by the generic operator, the bare plural noun phrase *professors* is interpreted in the restrictor of *Gen*. Consequently, (40-a) expresses a regularity about professors. The variable  $y$  contributed by *a cup of tea*, on the other hand, is existentially bound in the scope of *Gen*. As a result, *professors* in (40-a) is interpreted as generically quantified and *a cup of tea* as existentially quantified. Which variables are bound by *Gen* and which are not, is determined by sentential stress, topicality, and various other factors. The default case for individual variables in indefinite singular and bare plural generic sentences is that *Gen* binds only the variable contributed by the indefinite noun phrase in subject position; all other nominal and/or verbal material is interpreted in the scope of *Gen* (Krifka et al. 1995:26).<sup>32</sup>

The partitioning into a restrictor and a scope also captures the intuition that generic sentences express a lawlike relation between two states of affairs.

The structure in (39) as such does not make any claims regarding the interpretation of the generic operator, though. The intuition shared in the literature is that the

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<sup>32</sup>The following sentence constitutes a counterexample to this default split:

- (i) *Typhoons arise in this part of the pacific.*  
 (Krifka et al. 1995:26)

The most natural reading of the example above is that it expresses a regularity for a certain part of the pacific: regularly some typhoons arise there. In this case, situations involving the part of the pacific under discussion form the restrictor, and the bare plural in subject position, *typhoons*, is part of the scope of *Gen*. The other, less accessible, reading is given by the default restrictor-scope arrangement: ‘Typhoons in general arise in this specific spot of the pacific ocean’. (Krifka et al. 1995:26).

generic operator contributes (quasi-)universal quantification over individuals and/or situations of a certain kind that may or may not be part of the world of evaluation. This is illustrated in the examples in (41) (repeated from above).

- (41) a. *Lions have four legs.*  
 b. *A lion has four legs.*

Intuitively, the generic sentences in (41) state that all relevantly normal lions (i.e. those that are not legitimate exceptions) have four legs. How can this intuition be captured? The dyadic operator account introduced in (39) is in principle compatible with many different formal analyses of the interpretation of *Gen*. In fact—apart from modal accounts, which are discussed below—various different interpretations for *Gen* have been proposed in the literature: e.g. (quasi-)universal quantification over relevant/possible entities, prototypes, or stereotypes. A detailed discussion of these accounts is beyond the scope of this dissertation; for a summary see Krifka et al. (1995).

Modal accounts for the meaning of *Gen* are motivated by the non-accidental nature of the generalizations, as well as their tolerance for the existence of exceptional individuals in the actual world. In these accounts, *Gen* is interpreted as a modal operator in analogy to Kratzer’s account for the meaning of modals (cf. Section 3.2). The various proposals differ with respect to the set of accessible worlds associated with *Gen*, and the degree of influence that is accorded to the properties denoted by the subject noun phrase and the predicate on the make-up of the accessibility relation (cf. Krifka et al. 1995; Papafragou 1996; Drewery 1998; Eckardt 2000; Greenberg 2007).

As stated above, the first modal account that will be discussed in detail is the proposal in Krifka et al. (1995), which is based on Heim’s (1988 [1982]) account for “generic indefinites”. Heim proposes that indefinite noun phrases in generic sentences act like *if*-clauses in conditional sentences. That is, they restrict a covert necessity modal (cf. Appendix A3). The covert modal involved in generic sentences differs from the covert epistemic necessity modal found with indicative conditional sentences, though, which is assumed to only take realistic modal bases and ordering sources. Since the covert modal in generic sentences expresses lawlike regularities, Heim proposes that it is interpreted with respect to non-realistic modal bases and stereotypical ordering sources. Krifka et al. (1995) flesh out Heim’s proposal as follows.

- (42)  $\text{Gen}[x_1, \dots, x_i; y_1, \dots, y_j](\text{Restrictor}; \text{Matrix})$  is true in  $w$  relative to a modal base  $B_w$  and an ordering  $\leq_w$  iff:
- $$\forall x_1, \dots, x_i \forall w' \in B_w [\text{Restrictor}[x_1, \dots, x_i](w') \rightarrow$$
- $$\exists w'' \in B_w [w'' \leq_w w' \ \& \ \forall w''' [w''' \leq_w w'' \rightarrow$$
- $$\exists y_i, \dots, y_j [\text{Matrix}[x_1, \dots, x_i, y_1, \dots, y_j](w''')]]]$$
- (adapted from Krifka et al. 1995:52)

The specific modal flavor of the generic operator is such that the property contributed by the material in the restrictor is evaluated against the worlds in the modal base  $B_w$ , which are “most normal” with respect to the ordering  $\leq_w$ .

The truth-conditions of the generic sentence in (43-a), for example, come out as in (43-b).

- (43) a. *Lions have bushy tails.*  
 b.  $\forall x \forall w' \in B_w [\text{lion}(x)(w') \rightarrow \exists w'' \in B_w [w'' \leq_w w' \ \& \ \forall w''' [w''' \leq_w w'' \rightarrow \exists y [\text{bushy-tail}(y)(w''') \ \& \ \text{has}(y)(x)(w''')]]]]]$   
 (Krifka et al. 1995:52)

The formula states that “a world which contains a lion without a bushy tail is less normal than a world in which that lion has a bushy tail” (Krifka et al. 1995:52), i.e. in the most normal worlds from the point of view of the world of evaluation, all lions have bushy tails.

If the limit assumption is made, the account proposed by Krifka et al. can be stated as in (44).

- (44)  $\forall x \forall w' \in O(f \cap \{w'' : \text{lion}(x)(w'')\}, g, w) [\text{has-a-bushy-tail}(x)(w')]$

Krifka et al. argue that Heim’s analysis of the modal flavor of *Gen* and of the covert necessity modal in conditionals is too restrictive. They argue that *Gen*, as well as the covert necessity modal involve many different combinations of modal bases and ordering sources. For generic sentences in particular, different “most normal” worlds are required to capture the different types of generic statements found in the data. Consider the different possible readings for *Gen* in (45).

- (45) a. *Two and two equals four.* (tautology)  
 b. *A spinster is an old, never-married woman.* (definition)  
 c. *This machine crushes oranges.* (design)  
 d. *Mary smokes cigarettes.* (behavior)  
 e. *Bob jumps 8.90 meters.* (ability)  
 f. *A lion has a mane.* (stereotype)  
 (Krifka et al. 1995:53f)

For the examples in (45), the set of accessible worlds vary among most normal with respect to e.g. mathematical laws, the interpretation of English, and the specific design of an artifact. Hence, the parameters that model the modal base and the ordering source seem to allow a similar array of possible values as for modals (cf. Section 3.2).

The account in Krifka et al. (1995) successfully captures that generic sentences express non-accidental regularities, and that they tolerate exceptions. Since Krifka et al. assign a modal interpretation to generic sentences, not only actual facts and situations

are considered when a generic sentence is evaluated. As discussed above, generalizations that only hold for the world of evaluation may be accidental, and therefore do not necessarily depend on an underlying regularity. By evaluating the generic sentence against a specific set of possible worlds, it is ensured that accidental generalizations that are not based on an underlying regularity come out as false.

The observed tolerance for exceptions found with generic sentences is also captured. In case the accessibility relation determined for a given generic sentence is a non-realistic relation (e.g. ideal-based, see Section 3.2), the world of evaluation is not a member of the set of most normal worlds.<sup>33</sup> Consequently, the facts in the world of evaluation are not considered when the validity of the universal statement about individuals in the accessible worlds is evaluated; individuals in the world of evaluation that do not conform to the regularity that is expressed do not have an effect on the truth or falsity of the generic sentence.

Krifka et al.'s (1995) account is not without shortcomings, though. One issue is already pointed out in Krifka et al. (1995): defining the accessible worlds as the “most normal” worlds seems counter-intuitive for some generic sentences. Krifka et al. observe that the “normalcy” that is required for the truth of these sentences seems highly abnormal from the point of view of the world of evaluation. Consider (46).

(46) *Turtles die old.*

Example (46) is a true statement about turtles given what is known about their biology. For this generic sentence to come out as true, though, the most normal worlds with respect to considerations of biology need to be those where all turtles die old. However, these worlds are highly abnormal from the point of view of the actual world. In fact, most turtles die young because they are killed by predators.<sup>34</sup>

Example (47) illustrates another problematic aspect for the accessibility relation assumed in Krifka et al.

(47) *Cats bear live young.*

Since (47) expresses a true generalization about cats, the account predicts that in the biologically most normal worlds all cats bear live young. This means that the biologically most normal worlds are those where only female cats of the right age exist. However, worlds like these are highly abnormal, if not impossible: how can the existing female cats bear any young, if no male cats exist?<sup>35</sup> One possibility to account for

<sup>33</sup>An accessibility relation  $R$  is realistic iff  $\forall w \in W[wRw]$ , i.e. if  $R$  is reflexive. Accessibility relations that are not realistic are said to be non-realistic.

<sup>34</sup>Similar observations are made e.g. in Papafragou (1996), Eckardt (2000) and Greenberg (2007).

<sup>35</sup>Krifka et al. (1995) propose that this problem can be solved by assuming that the generic operator quantifies over “most normal” situations instead of most normal worlds. For reasons of space, the situation theoretic account cannot be introduced at this point. For details, cf. Krifka et al. (1995).

(47) in Krifka et al.'s account is to argue that the noun phrase in subject position is contextually restricted to female cats. The following two reasons speak against this argument. First, in contrast to nominal quantifiers, generic sentences do not allow for contextual restrictions (cf. Dahl 1975; Condoravdi 1994; Krifka et al. 1995, *pace* Drewery 1998; Greenberg 2007). Compare (48) and (49).

- (48) a. Uttered at UCLA: *All professors wear a tie.*  
 b. *At UCLA, all professors wear a tie.*  
 (Krifka et al. 1995:45)

- (49) a. Uttered at UCLA: *A professor wears a tie.*  
 b. *At UCLA, a professor wears a tie.*  
 (Krifka et al. 1995:45)

Nominal quantifiers, like *all* in (48-a), may be understood as contextually restricted, i.e. (48-a) may be understood as (48-b). For generic sentences, contextual restriction is impossible. Even if (49-a) is uttered at the UCLA campus, Krifka et al. argue, it cannot be understood as expressing (49-b), which contains an explicit spatial expression.

Even if one were to assume that contextual restriction is an option—as argued for in Drewery (1998) and Greenberg (2007)—no adequate restriction for (47) could be found. Assume for example, that *cats* is contextually restricted to *female cats of the right age*. This restriction is not strong enough. It does not exclude e.g. female cats of the right age that have a birth defect and are infertile, or female cats of the right age that are kept apart from male cats and never bear any young. In fact, many different reasons can be found for why female cats of the right age might not bear live young. All of the individuals that have at least one of the properties that make them exceptions will have to be excluded by the contextual restriction for *Gen* in (47). However, the disjunction of all of these properties seems to be a highly unnatural “salient property” to be assigned contextually. In other words, while a contextual restriction of *all professors* to *all professors at UCLA* seems plausible enough, the restriction of *cats* to *female cats of the right age that neither have a birth defect, nor are kept apart from male cats, nor ...* does not.

The second argument against appealing to contextual restrictions is that, for some sentences, incompatible restrictive properties would have to be assumed for the subject noun phrase. Consider (50).

- (50) *Peacocks lay eggs and have beautiful feathers.*

Since only female peacocks lay eggs and only male peacocks have the characteristic, beautiful feathers, the subject noun phrase *peacocks* would have to be restricted to individuals that are both male and female. Hence, the assumption that *Gen* is contex-

tually restricted cannot solve the problems that are raised by the accessibility relation assumed in Krifka et al. (1995).

Two further issues for Krifka et al.’s (1995) modal account arise because the set of accessible worlds  $B_w$  does not depend on the material in the restrictor of *Gen*.

As observed for generic sentences with impersonally interpreted *ich* and *du* in Chapter 2, all individuals in the accessible worlds have to behave according to what is most normal. This is the case because the set of worlds  $B_w$  is determined entirely contextually, and depends neither on the material in the restrictor, nor on the material in the scope of *Gen*. Consider the example in (51).

(51) *Dogs chase cats.*

Since the sentence above expresses a regularity regarding the behavior of animals, it is plausible to assume that only such worlds are considered that are most normal with respect to biological laws (or maybe even specifically with respect to the behavior of animals). This predicts that both the dogs and the cats show “most normal behavior” in these worlds. Intuitively, however, only the individuals that are picked by the material in the restrictor have to be relevantly normal or ideal. For (51), this means that only the most normal behavior of dogs is relevant. Nothing seems to be required regarding the behavior of the cats in these worlds.

The lack of dependence between *Gen* and the specific form of the subject property leads to another problem (cf. Drewery 1998): the addition of an intersective modifier to the subject property results in simple intersective modification of the material in the restrictor. Compare the examples in (52).

(52) a. *Birds fly.*  
b. *Baby birds fly.*

If modifiers have the simple effect of restricting the domain of individuals—given the same subject matter—it is predicted that the same set of worlds is picked for both sentences in (52). The truth-conditions of the two sentences are given in (53).

(53) a.  $\forall x \forall w' \in O(f \cap \{w'' : \text{birds}(x)(w'')\}, g, w)[\text{fly}(x)(w')]$   
b.  $\forall x \forall w' \in O(f \cap \{w'' : \text{baby-birds}(x)(w'')\}, g, w)[\text{fly}(x)(w')]$

Since universal quantifiers are left-downward-monotone, and the set of baby birds is a subset of the set of birds, the truth of (53-b) follows from the truth of (53-a). This is undesirable since, of course, baby birds do not fly, yet.

The final issue that is discussed for Krifka et al. depends on the assumption of strict universal quantification over individuals in the accessible worlds. As the discussion of example (47) above suggests, this assumption is too strong. The quantification needs to be qualified. For the truth of (47) according to Krifka et al.’s account, only female cats

of a certain age may be considered, but worlds in which only these kinds of cats exist may not contain any cats that actually bear live young.<sup>36</sup> To ensure that sentences like (47) can be interpreted, quantification over individuals in the accessible worlds cannot be strictly universal. Since contextual restriction of the domain of quantification has been shown to be implausible, the restriction has to be part of the meaning of *Gen*: the modal interpretation of generic sentences needs to involve a special type of in-built restriction which picks out the relevantly non-exceptional individuals in the accessible worlds.

The following consideration also supports this assumption. Tolerance for exceptions is captured in Krifka et al. (1995) with the assumption of a non-realistic accessibility relation. Since the actual world is consequently not necessarily a member of the set of accessible worlds, the properties and behavior of actual individuals may turn out to be irrelevant. However, it seems counter-intuitive to assume that the accessibility relation involved with generic sentences is necessarily non-realistic given that generic sentences may express regularities that are observed in the world of evaluation. A similar point is made by Dahl (1975), who argues that physical and biological rules require a realistic accessibility relation. If generic sentences were to involve realistic accessibility relations, though, Krifka et al.'s account would require that the generalizations that are expressed be exceptionless. Even though Dahl suggests that physical and biological laws fall into this class, this is obviously not always the case, as exemplified by the scenario featuring the three-legged lion Paul in Section 3.3.1.

In sum, the modal account in Krifka et al. (1995) successfully captures that generic sentences express non-accidental generalizations, and provides an account for their tolerance of exceptions. The account is not without problems, though. The problematic aspects identified above point toward two desiderata for modal proposals for the meaning of *Gen*:

- (54) a. The set of accessible worlds needs to depend on (at least) the subject property.
- b. Universal quantification over individuals needs to be restricted by a genericity-specific, inbuilt restriction.

To meet the second desideratum, Papafragou (1996) and Eckardt (2000) argue for the introduction of a normalcy predicate that restricts the domain of quantification of *Gen* to those individuals in the accessible worlds that are relevantly normal or ideal.<sup>37</sup>

<sup>36</sup>The only worlds that fulfill the criteria are those in which cats are nearly extinct, only pregnant cats exist, and the last male cat died recently. These worlds, however, do not count as normal in any sense of the word.

<sup>37</sup>Eckardt (2000) introduces two different operators which filter out the exceptional individuals in the accessible worlds depending on the type of generalization that is expressed. That is, generalizations about normal or ideal course of events are distinguished. Eckardt introduces an operator  $N(F)$  which returns the set of "normal" individuals for the subject property  $F$ , and an operator  $I(F)$ , which returns

With respect to the accessibility relation associated with *Gen*, they keep the basic architecture of the modal account in Krifka et al. (1995), though.

Drewery (1998) and Greenberg (2007) aim to capture both of the desiderata above. Both in particular focus (i) on the problem of which individuals count as legitimate exceptions for generic sentences, (ii) on how intuitions regarding this point can be modelled formally, and (iii) in what way this affects the set of accessible worlds.

### 3.3.3 Drewery (1998)

Drewery (1998) discusses generic statements in conjunction with other lawlike statements from a philosophical point of view.<sup>38</sup> She distinguishes three types of generalizations: (i) “true laws”, (ii) “*ceteris paribus* laws”, and (iii) accidental generalizations. True laws and *ceteris paribus* laws, in contrast to accidental generalizations, are non-accidental, lawlike regularities. *Ceteris paribus* laws also differ from true laws and accidental generalizations in their tolerance for exceptions. Specifically, the exceptional individuals and circumstances are assumed to be filtered by a *ceteris paribus* clause.

Conceptually, Drewery argues that true laws are special cases of *ceteris paribus* laws, i.e. laws for which no exceptional individuals or circumstances exist. This is motivated by the observation that true laws and *ceteris paribus* laws—in contrast to accidental generalizations—can be expressed with generic sentences.

Drewery stresses the importance of a detailed analysis of the nature of exceptions to determine the truth-conditions for generic sentences. In fact, the task of determining the set of appropriate exceptions for a given generic sentence is seen as the central issue on which all other interpretational aspects of generic sentences are based. This assumption is motivated by the following considerations: Exceptional individuals and circumstances do not have arbitrary properties. Or rather, the properties that are responsible for making individuals or circumstances exceptional with respect to a given generic statement are neither random, nor independent from the generalization that is expressed. Exceptions underlie other, specific regularities that are in conflict with the regularity expressed by the generic statement, and that override it. In most cases, the exact regularity that is seen as the reason for why a given individual counts as an exception cannot be determined. However, the specific, conflicting properties are assumed to belong to the same greater body of rules, e.g. moral principles, legal codes,

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the set of “ideal” individuals for *F*. Formally, the two operators differ with respect to their properties regarding reasoning with generic sentences. For details cf. Eckardt (2000).

<sup>38</sup>Drewery (1998) exclusively discusses bare plural generic sentences. She notes, though, that indefinite singular generic sentences, and generic sentences that involve kind predication are linguistically more restricted.

physical laws of nature, or genetic laws. This greater body of rules exists independently, and is part of world knowledge.<sup>39</sup>

Drewery's (1998) focus on the nature of exceptions is connected to an observation first made in Carlson (1977): The properties that constitute an exception depend on the properties in the restrictor *and* the properties in the scope of the generic operator. That is, no single set of exceptional *F*s can be determined for different generic statements about individuals with property *F*. Any account that proposes such a "static" set of exceptions makes undesirable predictions. Consider the true generic statement in (55), and assume that a three legged dog Fido exists in the world of evaluation that lost its leg in an accident.

(55) *Dogs have four legs.*

With respect to (55), Fido is a legitimate exception, i.e. Fido is in the set of exceptional dogs.<sup>40</sup> But, even though Fido is an exceptional dog with respect to having four legs, Fido is not an exception to (56).

(56) *Dogs are mammals.*

If the set of exceptional dogs were determined independently of the property denoted by the predicates *have four legs* and *be a mammal*, Fido would have to be both a member of the set of exceptional dogs and a member of its complement.

From these considerations, Drewery infers that the set of exceptional individuals for a given generic sentence depends on the two properties that are related by the generic sentence, and that the set is determined in a principled way relative to a greater body of law.

The core idea of Drewery's formal proposal is to model the considerations and intuitions about legitimate exceptions, and to take this result as the basis from which all other aspects of the interpretation of generic sentences are determined.

Drewery calls the set of individuals that count as legitimate exceptions to a given generic statement its *exception class*. Its complement is the *set of non-exceptional individuals*. Drewery models the set of non-exceptional individuals with the help of a primitive function  $N_{F,G}$ , which depends on the restrictor *F* and the scope *G* of the generic operator.<sup>41</sup> The extension of  $N_{F,G}$  in an arbitrary world *w* is the set of all (actual and possible) non-exceptional *F*s with respect to *G*, see (57).<sup>42</sup>

<sup>39</sup>For an account of generic sentences which also stresses the role of the speaker's beliefs/knowledge see ter Meulen (1986, 2012).

<sup>40</sup>Incidentally, Fido and Paul are friends.

<sup>41</sup>The property  $N_{F,G}$  is intended to perform the role of the *ceteris paribus* clause.

<sup>42</sup>Drewery (1998) does not work in a system with explicit world variables, and assumes world-relative individual domains. Consequently, the extension of an expression like  $N_{F,G}(x)$  is always determined relative to the world in which *x* exists.

- (57)  $N_{F,G}(x) \Leftrightarrow x$  is a non-exceptional  $F$  with respect to being  $G$   
 (Drewery 1998:91)

The following example illustrates how  $N_{F,G}$  is determined for the sentence *Peacocks have a brightly coloured tail*.

- (58)  $N_{\text{peacock, has-a-brightly-coloured-tail}}$  = actual or possible peacocks without the exception class, i.e. without the females, juveniles, those whose tails have been amputated and so on.  
 (Drewery 1998:92)

In other words, the set of non-exceptional  $F$ s with respect to being  $G$  contains those individuals that are not filtered out by another rule.

In Drewery's account, the modal accessibility relation involved in generic sentences is derived from the set of non-exceptional individuals. The set  $N_{F,G}$  is used to determine an equivalence relation  $\sim_{F,G}$  on the set of possible worlds  $W$ , which creates a partition on  $W$ . The resulting equivalence classes are such that all worlds in a class share the same set of non-exceptional  $F$ -individuals with respect to being  $G$ .<sup>43</sup>

- (59)  $w_1 \sim_{F,G} w_2$  iff the extension of  $N_{F,G}$  in  $w_1$  = the extension of  $N_{F,G}$  in  $w_2$   
 (Drewery 1998:91)

The relevantly similar worlds that are accessible from the world of evaluation are all and only the worlds that are members of the equivalence class of the world of evaluation. From the way in which  $w_1 \sim_{F,G} w_2$  is determined, it follows that the accessible worlds agree (i) on the individuals that are to be considered non-exceptional with respect to a specific, world-dependent body of law, and (ii) on the content of the relevant body of law used to determine  $N_{F,G}$ .

In sum, Drewery proposes that generic sentences of the form *Fs are G* have the following truth-conditional content.

- (60) In all possible worlds in which the same  $F$ s are non-exceptional with respect to being  $G$  (as in the world of evaluation), all non-exceptional  $F$ s with respect to being  $G$  are  $G$ .  
 (Drewery 1998:91, elaboration in parentheses added for clarification)

Notably, Drewery assumes that every individual only exists in one single possible world. To make her system independent from this assumption, and compatible with a shared domain of individuals (as is usually assumed in the literature on modality),

<sup>43</sup>An equivalence relation on a domain  $A$  is a reflexive, symmetric, and transitive relation. A set of elements related to each other by an equivalence relation is a subset of  $A$ , and is called an equivalence class induced by the relation. The set of equivalence classes constitutes a partition on  $A$ , i.e. the classes are pairwise disjoint and their union is  $A$ .

I give a translation of her account into a system with explicit world variables and a constant individual domain.

The first step is to let  $N_{F,G}$  assign a set of pairs of individuals and worlds to a given world  $w$ .<sup>44</sup>

(61) A pair  $\langle x, w' \rangle$  is in  $N_{F,G}(w)$  iff  $x$  is a non-exceptional  $F$  with respect to  $G$  from the point of view of the world  $w$ , but with respect to its properties in  $w'$ .

The similarity relation  $\sim_{F,G}$  is also adapted to fit the new version of  $N_{F,G}$ : The relation  $\sim_{F,G}$  partitions the set of worlds depending on whether the worlds pick out the same set of individual-world-pairs based on the body of rules under consideration. This is defined in (62).

(62)  $w_1 \sim_{F,G} w_2$  iff  $\forall \langle x, w \rangle [N_{F,G}(w_1)(\langle x, w \rangle) \leftrightarrow N_{F,G}(w_2)(\langle x, w \rangle)]$

The right side in (62) is equivalent to  $N_{F,G}(w_1) = N_{F,G}(w_2)$ . Therefore, in all worlds that are accessible from the world of evaluation  $w$ , the set of non-exceptional  $F$ s with respect to being  $G$  is constant, and can be simplified to  $N_{F,G}(w)$ .

In combination, the translation of Drewery's account for the meaning of generic statements of the form *Fs are G* into a system with explicit world variables results in the truth-conditional content proposed in (63).

(63)  $\forall w' [w \sim_{F,G} w' \rightarrow \forall x [F(x)(w') \ \& \ N_{F,G}(w)(\langle x, w' \rangle) \rightarrow G(x)(w')]]$

Drewery's account captures both desiderata for modal accounts of *Gen* listed at the end of Section 3.3.2: (i) The accessibility relation is defined based on the function  $N_{F,G}$  that models the set of non-exceptional  $F$ -individuals with respect to being  $G$ , and (ii) the function  $N_{F,G}$  depends on the property denoted by the material in the restrictor and the material in the scope of *Gen*.

Hence, the problems identified for the account in Krifka et al. (1995) in the previous section do not apply to Drewery's account. Drewery discusses her solution for the problem regarding restrictive modification of the subject property in detail. Her account captures that the introduction of restrictive modifiers changes the set of accessible worlds: The truth of a generic sentence depends first and foremost on the function  $N_{F,G}$ , which, in turn, depends on the properties  $F$  and  $G$ . Therefore, if the subject property  $F$  is restricted by a property  $K$ , it cannot be ensured that the set  $N_{F,G}(w)$  stands in any kind of well-defined relation to the set  $N_{F\&K,G}(w)$  (for an arbitrary world  $w$ ). In principle,  $N_{F,G}(w)$  and  $N_{F\&K,G}(w)$  cannot be identical, and do

<sup>44</sup>This definition is compatible with both world-dependent domains of individuals and a single domain of world-independent individuals. Since non-exceptionality is determined with respect to facts in specific worlds,  $\forall x \forall w, w', w'' [\neg(\langle x, w \rangle \in N_{F,G}(w'') \rightarrow \langle x, w' \rangle \in N_{F,G}(w''))]$  holds. That is, an individual  $x$  may be in  $N_{F,G}(w')$  with respect to its properties in  $w$ , but may be an exceptional  $F$  with respect to being  $G$  relative to its properties in  $w'$ .

not have to stand in a subset relation; the two sets of non-exceptional individuals may even be disjoint. Drewery illustrates this last possibility with the following example (adapted from Drewery 1998:108–110 to the revised formalism).

(64) *Students take exams.*

Assume that the generic statement about students in (64) is true in  $w$  with respect to the body of law governing educational institutions in  $w$ . Assume also that there is a special school, the University of Carlops, where students are not evaluated by taking exams, but via a continuous assessment system. Thus, it is also true in  $w$  that

(65) *Students at Carlops University do not take exams.*

This means that students at the University of Carlops count as exceptional students with respect to taking exams. Hence,  $N_{\text{student,take-exams}}(w)$  will not contain any pair  $\langle x, w \rangle$  where  $x$  is a student at Carlops in  $w$ . However,  $N_{\text{Carlops-student,take-exams}}(w)$ <sup>45</sup> will contain only individuals which are students at Carlops University. Therefore, there is no  $\langle x, w \rangle$  such that  $N_{\text{student,take-exams}}(w)(\langle x, w \rangle)$  and  $N_{\text{Carlops-student,take-exams}}(w)(\langle x, w \rangle)$ .

This observation can be generalized to any type of modifying material. Formally, all properties that are interpreted in the restrictor of the generic operator have this effect. This includes not only adjectival or prepositional modifiers of the subject noun phrase, but also relative clauses and *if/when*-clauses restricting *Gen*. As Drewery (1998) points out, scenarios like the one above are a problem for any account of restricted generic sentences in which restrictions are simply intersective modifiers on the domain of individuals, e.g. the modal proposal of Krifka et al. (1995).

Even though Drewery's proposal captures both crucial desiderata for a modal account of *Gen*, some aspects of her account are, to my mind, problematic. One issue of Drewery's proposal concerns her view on the scope of the data that can be captured by her account. She argues that the value of  $N_{F,G}$  is context dependent since (i) the truth of generic sentences can change over time, and (ii) generic sentences without an overt modal can sometimes be interpreted as if it contained an overt modal element.

Regarding the first point, I argue that a change in content of  $N_{F,G}$  over time is not context dependence as observed e.g. for modals, anaphora, and other context dependent material. Compare the examples in (66).

(66) a. **Scenario:** Peter sneezes ten times.  
*Just now, Peter had to sneeze ten times.*

<sup>45</sup>Drewery (1998:95) argues that, in general,  $N_{F,G} = N_{F,\neg G}$  if the body of rules is held constant. For example in the actual world, penguins are exceptional birds with respect to flying. However, they are also exceptional birds with respect to not flying, because *Penguins do not fly* is true, although *Birds do not fly* is judged false. That is, to evaluate the generic statement *Birds do not fly* the same set of birds is considered as for evaluating *Birds fly*.

- b. **Scenario:** Properties of dogs are discussed.

*#Just now, dogs had four legs.*

Note that the value of  $N_{F,G}$  does not change from one moment to the next, which is implied by the phrase *just now*. Even if at the moment referred to by *just now* the truth of a generic sentence holds, pointing out one specific instance is pragmatically odd. In contrast, obligations expressed by modals may change more freely.

Drewery's second point above is based on the observation that generic sentences without overt modal elements sometimes express the same regularity as a corresponding generic sentence with an overt modal element. Compare (67-a) and (67-b).

- (67) a. *Countries with common borders share their resources.*  
(Drewery 1998:93)
- b. *Countries with common borders must share their resources.*

Example (67-a) has two readings. In its first reading, it is understood as a description or report of a regularity regarding the conduct of countries with common borders. This regularity is motivated by legal or moral considerations, and may be based on a series of observations for countries of this kind in the world of evaluation. In the second reading, (67-a) expresses a legal or moral necessity for countries with common borders. This reading (67-a) shares with (67-b). Drewery argues that which of the two possible interpretations is understood depends on “the kind of modality implied in the context” (Drewery 1998:93), and is also not an instance of context-dependent variation as found with e.g. modals. While one and the same modal may be used with different flavors in the same utterance, see (68), no variance of this sort is observable for generic sentences.

- (68) *Peter can<sub>epistemic</sub> only be at his neighbor's place right now because he told me that he can<sub>deontic</sub> watch Germany's Next Topmodel there.*

It can be shown that generic sentences that express ideal rules of conduct, i.e. (67-a) in its second interpretation, cannot be captured in Drewery's system. Since both readings of (67-a) express a regularity based on the legal/moral body of law in force at the world of evaluation, both readings are modelled by assuming that  $N_{\text{countries-with-common-borders,share-their-resources}}$  is determined with respect to this body of law. For the second reading, Drewery suggests that (67-a) expresses the same statement as (67-b). Hence, both sentences have the same truth-conditions. In particular, both sentences are interpreted relative to the same non-exceptional individuals. This means that the overt modal in (67-b) does not contribute any additional meaning to the shared truth-conditions.

Undesirable predictions arise because the definition of the accessibility relation induced by  $N_{F,G}$  cannot capture generalizations about ideals: the accessibility relation

$\sim_{F,G}$  is by definition realistic, independently of the body of law used to determine  $N_{F,G}$ .<sup>46</sup>

$$(69) \quad w_1 \sim_{F,G} w_2 \text{ iff } N_{F,G}(w_1) = N_{F,G}(w_2)$$

$$(70) \quad \forall w'[w \sim_{F,G} w' \rightarrow \forall x[F(x)(w') \ \& \ N_{F,G}(w')(\langle x, w' \rangle) \rightarrow G(x)(w')]]$$

Consequently, Drewery's account predicts that no true counterexamples for generic sentences may exist in the world of evaluation. If even a single counterexample were to exist in the world of evaluation, the sentence would immediately come out as false.<sup>47</sup> This means that generalizations about ideals cannot be captured as soon as the generalization is violated in the world of evaluation. Unfortunately, in a situation in which a generic sentence is intended to be taken as a rule of conduct typically some non-conforming non-exceptional individuals exist—their existence motivates the use of the generic sentence in the first place. Crucially, the speaker is not unsure whether the non-conforming individuals are in fact exceptional. If the non-conforming individual were exceptional, the speaker's utterance of the rule of conduct would not be motivated any more. Consider example (71).

**Scenario:** A finds out that B, a student, is still living at his parents' place.

$$(71) \quad \begin{array}{l} \text{A to B: } \textit{Studenten wohnen doch nicht mehr zu Hause!} \\ \quad \quad \text{student live PRT not still at home} \\ \text{A to B: 'Students don't still live at their parents' place!'} \end{array}$$

In (71), A intends to convey is that B should not live at his parents' place any longer. He neither questions B's being a student, nor his non-exceptionality regarding the rule. If B were not a student or an exception to the rule, A's utterance would not apply to B in the first place, and B would not feel criticized. Consequently, the rule expressed in (71) can be valid, even though the non-exceptional individual B violates it in the world of evaluation.

Since Drewery assumes that sentences like (71) have a realistic accessibility relation, she cannot capture this example. In fact, two results follow from the discussion above: (i) Drewery's proposal can only capture generalizations that are not violated in the world of evaluation, and (ii) generic sentences with overt modals cannot be modelled as proposed by Drewery. That is, the presence of an overt modal has an effect on the truth-conditions of a generic sentence.

<sup>46</sup>The set of accessible worlds contains those worlds  $w'$  that are in the equivalence class of the world of evaluation  $w$  with respect to  $N_{F,G}$ . Hence,  $w$  will always be in the set of accessible worlds.

<sup>47</sup>In fact, no individual that does not conform to the rule or norm expressed by a generic sentence may exist in any accessible world.

Dahl's (1975) class of "descriptive lawlike statements" are, however, unproblematic for Drewery's account.<sup>48</sup>

I leave the problem of the second interpretation of sentences like (67-a) and (71) for further research since a detailed analysis of these examples necessarily involves an investigation of their primary discourse function to enforce the rule, norm, or ideal expressed by the sentence. This investigation is beyond the scope of this thesis.

### 3.3.4 Greenberg (2007)

Like Drewery (1998), the modal account proposed in Greenberg (2007) also aims to capture the influence of exceptional individuals on the overall interpretation of generic sentences. Greenberg also aims to investigate and model the difference between generic sentences containing indefinite singular noun phrases (*IS generics*) and those containing bare plurals (*BP generics*).

Greenberg's starting point is an observation from the literature that only a proper subset of lawlike generalizations can be expressed with IS generics, while all lawlike generalizations can be expressed by means of BP generics (cf. Krifka et al. 1995).<sup>49</sup> Compare the IS generics in (72) and (73) to the respective BP generics.

- (72) a. *A dog has four legs.*  
 b. *Dogs have four legs.*  
 (Greenberg 2007:131)
- (73) a. *#A madrigal is popular.*  
 b. *Madrigals are popular.*  
 (Greenberg 2007:132)

Previous attempts in the literature to capture the asymmetry between IS generics and BP generics propose e.g. that IS generics can only express relations between individuals and their "essential properties" (cf. Krifka et al. 1995), or that the underlying semantics of IS generics differs fundamentally from that of BP generics (cf. Cohen 2001). In contrast, Greenberg (2007) argues that the main difference between IS generics and BP generics lies in their different behavior regarding their tolerance for exceptions: Only BP generics can be used to express generalizations that have exceptions for which speakers cannot explicitly state what causes their status as exceptions. This vagueness, Greenberg argues, is the result of vagueness with respect to the underlying regularity which can only be expressed by BP generics. IS generics, in contrast, can only express

<sup>48</sup>Note that the descriptive readings still differ from accidental generalizations in that some underlying non-accidental regularity is assumed.

<sup>49</sup>This is also observed in Drewery (1998), but not further pursued. Drewery leaves generic sentences containing indefinite singular noun phrases for further research, and focusses completely on generic sentences containing bare plurals.

generalizations for which speakers can determine explicitly which individuals count as exceptions, and why. Example (74) illustrates this observation.

- (74) a. #*A Norwegian student with a name ending in ‘s’ wears thick green socks.*  
 b. *Norwegian students with a name ending in ‘s’ wear thick green socks.*  
 (Greenberg 2007:132)

Assume that it is observed that Norwegian students with a name ending in ‘s’ seem to wear thick green socks all the time, but that it is unclear whether there is an underlying reason for this. In such a scenario, only the BP generic variant in (74) can be used, which expresses that there is an underlying regularity which cannot be made explicit. The IS variant is infelicitous. If (74) is considered in a different scenario in which there *is* an underlying rule issued by some official institution, the IS variant improves. As expected, the BP variant stays felicitous.

A central topic in Greenberg’s investigation of the difference between IS generics and BP generics are the different effects exceptions and irrelevant individuals have on the truth of a generic sentence. Irrelevant individuals, in contrast to exceptional individuals, are not taken into consideration at all when the validity of a given generic statement is considered. Which individuals are relevant is argued to be determined either contextually as in (75-a) (*pace* Condoravdi 1994; Krifka et al. 1995, see discussion in Section 3.3.1), or by some explicit frame-setting expression as in (75-b).

- (75) a. (Context: There are professors and students in this university.)  
*A professor wears a tie./ Professors wear a tie.*  
 (Can mean: A professor in this university wears a tie.)  
 (Greenberg 2007:134)  
 b. *In this university, a professor wears a tie.*

Exceptional individuals are relevant for the truth of a given generic sentence. Their defining property is that for some reason or other, they are exempt from conforming to the generalization that is expressed. Greenberg formulates the *abnormality constraint* in (76) to capture this intuition.

- (76) *Abnormality constraint:* Individuals that are exceptions to a given generic statement need to be non-standard or abnormal in some sense.

The same considerations apply to irrelevant and exceptional situations.

Since IS generics and BP generics sometimes express the same generalizations, as e.g. in (72), Greenberg proposes a unified, underspecified modal semantics for both types of generic sentences. She argues that the difference between the two variants is a result of additional conditions regarding the make-up of the accessibility relation in the



(79) *It could be the case that all Ss are Qs or that no S is a Q.*

The association requirement is given in (80).

(80) *S is associated with P in w iff*  
 $\forall w' \in B_w [\forall x [P(x)(w') \rightarrow S(x)(w')]]$   
 for  $B_w$  epistemically/deontically/stereotypically etc. accessible from  $w$   
 (Greenberg 2007:143)

The accessibility relation used to determine whether  $S$  is associated with  $P$  can be any knowledge- or rule-based relation.<sup>51</sup> So, for two properties to be associated, (81) needs to be true in the world of evaluation for one possible interpretation of *must*.

(81) *All Ps must be Ss.*

The in-virtue-of accessibility relation based on  $S$  is given in (82).

(82)  $\lambda w. \lambda w'. \forall x [P(x)(w') \rightarrow S(x)(w')]$

For a world  $w$ , this relation returns those worlds  $w'$  in which all  $P$  individuals have the in-virtue-of property  $S$ .<sup>52</sup>

The final architecture of Greenberg's account for sentences of the form '*Ps are Qs*' and '*a P is a Q*' is schematically represented in (83).

(83)  $\forall w' [w' \in R_w \rightarrow \forall x [P^X(x)(w') \rightarrow Q(x)(w')]]$   
 with  $R_w = \lambda w'. \forall x [P(x)(w') \rightarrow S(x)(w')]$

<sup>51</sup>Greenberg does not explicitly state which accessibility relation is chosen in a particular case, or whether facts, norms, or stereotypes exhaust the possible sources for determining association. From the accompanying explanations, it seems that for  $S$  to be associated with  $P$ , it is sufficient if there is one accessibility relation that provides the necessary set of worlds.

<sup>52</sup>Mari (2008) criticizes Greenberg's assumption of an underlying in-virtue-of property. She argues that it is an established fact—she cites Rooth (1995) among others—that for any generic sentence that contains a subject NP with an overt modifying element, the modifying element is the relevant in-virtue-of property. Since Greenberg assumes that in-virtue-of properties are shared by all individuals in the accessible worlds, Mari argues that the modifying properties are predicted to be essential properties of the non-exceptional individuals.

I think that this is not a valid point of criticism and does not reflect what Greenberg intends with the in-virtue-of property. First, the association relation is not an essential property relation. Second, Mari's way of reasoning would imply that any in-virtue-of property could be inserted as an overt modifier without a change in the truth-conditions of the generic statement. That is, (i-a) should be equivalent to (i-b).

- (i) a. *A boy does not cry.* assumed in-virtue-of property: *tough*  
 (Greenberg 2007:142)  
 b. *A tough boy does not cry.*

However, introducing a modifier on the noun *boy* in (i-b) in fact changes the expressed regularity. This is another instance of Drewery's (1998) observation regarding restrictive modifiers (cf. Section 3.3.3).

The second main ingredient of the account is the restriction on the domain of individuals that are  $P$ s in the accessible worlds. In (83), the restriction is symbolized by the superscripted variable  $X$ . This domain restriction filters out all irrelevant and exceptional individuals to ensure that only relevant and non-exceptional individuals are universally quantified over.

With respect to this domain restriction, Greenberg’s proposal is based on Kadmon and Landman’s (1993) account of generic sentences. They argue that generic quantification over individuals involves a vague restriction of the quantifier domain—in contrast to true universal quantification (e.g. with quantificational determiners ‘every’ and ‘all’). The characteristic property of vague sets is that for some individuals in the domain of discourse, it cannot be determined with complete certainty whether they are elements of that set, or not. The truth of sentences containing universal quantifiers that are restricted to vague sets is determined in the spirit of supervaluationism (cf. Kadmon and Landman 1993).<sup>53</sup>

Greenberg adapts the original proposal in Kadmon and Landman (1993), and proposes a restriction  $X_P$  that vaguely restricts the set of individuals denoted by the property  $P$  in the accessible worlds. For a specific generic sentence, the restriction is determined relative to the in-virtue-of property  $S$  and a set of *blocking properties*  $\mathbf{B}_{\langle\langle S, Q \rangle, w\rangle}$ . As stated above, the set of blocking properties contains those properties that block the reasonable causation relation between the in-virtue-of property  $S$  and the property  $Q$ . In other words, blocking properties determine whether a  $P$ -individual is a legitimate exception. Consider the definition in (84).

- (84)  $B \in \mathbf{B}_{\langle\langle S, Q \rangle, w\rangle}$  iff  $B$  is taken to be a property which, from the point of view of  $w$ , ‘blocks’ the reasonable causation relation between  $S$  and  $Q$ .  
Formally,  $B \in \mathbf{B}_{\langle\langle S, Q \rangle, w\rangle}$  iff  $\forall x[(S(x)(w) \ \& \ B(x)(w)) \rightarrow \neg Q(x)(w)]$   
(Greenberg 2007:156)

The formal definition states that a blocking property effectively cancels out the effect of the in-virtue-of property without denying it. This means that blocking properties

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<sup>53</sup>In classical logical systems, a formula  $\mathcal{A}$  is either true or false. A supervaluationist system, in contrast, can capture that intuitively, it is sometimes not possible to determine the truth or falsity of a statement. This is accounted for because for any formula  $\mathcal{A}$ , all combinations of truth-values for all subformulas of  $\mathcal{A}$  are considered as independent *precisifications* of the formula. For instance, an atomic term  $A$  has two precisifications:  $A$  is true and  $A$  is false. The formula  $(A \ \& \ \neg A)$  also has two precisifications: if  $A$  is true, the formula is true, and if  $A$  is false, the formula is also true. A formula counts as *supertrue* iff it is true in all precisifications. Kadmon and Landman (1993) adapt this general idea to model vague domain restrictions for quantifiers. For a set of predicates, they consider all possible consistent combinations of properties as restrictions on the domain of quantification. These combinations constitute different precisifications of the domain restriction. Since an individual  $x$  in the domain of quantification may be filtered out by one precisification, but not by another, the restricted domain of quantification comes out as vague. For details see Kadmon and Landman (1993).

are consistent with the respective in-virtue-of property  $S$ , but inconsistent with the matrix predicate  $Q$ .

The restrictor  $X_P$  is defined on the basis of  $\mathbf{B}_{\langle\langle S, Q \rangle, w\rangle}$ . The restriction is defined as a pair  $\langle v_0, v \rangle$  where  $v_0$  and  $v$  are sets of properties. The strict part  $v_0$  contains those properties that are contributed contextually, or by a spatio-temporal adverbial. It filters out all irrelevant individuals. The vague part,  $v - v_0$ , contains the complements of the blocking properties.<sup>54</sup> It filters out the exceptional individuals, and models the vague quality of being a non-exceptional individual by contributing an arbitrary, consistent set of properties compatible with the properties  $P$ ,  $S$ , and  $Q$ . The properties in  $v - v_0$  obey two constraints, *abnormality* and *relevant abnormality*. The *abnormality constraint* is based on Cohen's (1996) idea that being "abnormal" means to have properties that are only true for the minority of the relevant individuals in all of the accessible worlds. Given this idea, Greenberg proposes that the properties in  $v - v_0$  have to hold for the majority of relevant individuals in all of the accessible worlds. The second requirement, *relevant abnormality*, additionally demands that the negated blocking properties are in  $v - v_0$ . In sum, the restriction  $X_P$  is defined as follows.

- (85) Let  $X_P$  be a pair  $\langle v_0, v \rangle$ , where both  $v_0$  and  $v$  are consistent sets of properties, every property  $v_i \in v_0$  is directly supplied by the context, and  $v_0 \subseteq v$ . Let  $\mathbf{B}_{\langle\langle S, Q \rangle, w\rangle}$  be a set of blocking properties:
- a.  $|\bigcap v \cap P \text{ in } c|$  is not significantly smaller than  $|\bigcap v_0 \cap P \text{ in } c|$   
(*abnormality*)
  - b. If  $b \in \mathbf{B}_{\langle\langle S, Q \rangle, w\rangle}$  then  $b^- \in v - v_0$   
(*relevant abnormality*)
- (Greenberg 2007:162)

As stated above, the difference observed for IS generics and BP generics is that IS generics can only be used to express generalizations for which the in-virtue-of properties can be explicitly stated. BP generics, in contrast, do not restrict the value of  $S$  explicitly; it is sufficient if the existence of some unspecific underlying in-virtue-of property can be assumed. Greenberg tries to capture this difference with the assumption that in the case of an unspecific in-virtue-of property, no specific, single value for  $S$  can be assigned. Instead, there are many different, potential values for  $S$  that could be the underlying link between  $P$  and  $Q$ .

With respect to the desiderata for modal accounts of genericity that were formu-

<sup>54</sup>Greenberg (2007) does not define the notion of the complement of a property. One possible definition which seems plausible given the discussion of blocking properties is proposed in (i).

- (i) A property  $P^-$  is the complement of a property  $P$  iff their extensions  $P_{ext}^-$  and  $P_{ext}$  in all possible worlds  $w$  are such that  $P_{ext} \cap P_{ext}^- = \emptyset$  and  $P_{ext} \cup P_{ext}^- = D_w$ , where  $D_w$  is the domain of individuals of world  $w$ .

lated in Section 3.3.2, Greenberg, like Drewery, can capture both with her formalization. Greenberg refers to a previous version of Drewery’s account proposed in Drewery (1997), and argues that her account improves on Drewery’s account regarding the treatment of exceptions. Greenberg’s major point of criticism is that exceptions in Drewery’s account only depend on the properties denoted by the subject and the matrix predicate. She argues that this is not sufficient since exceptions also depend on the context. This context dependence is captured by the contextually chosen in-virtue-of property  $S$  in Greenberg’s account. Consider example (86).

- (86) *A woman in this place doesn’t walk alone outside.*
- a. in virtue of: ‘living in such a violent place’
  - b. in virtue of: ‘living in such a religious town’
  - c. in virtue of: ‘having so many children’
- (Greenberg 2007:142)

Depending on when and where the speaker utters the sentence in (86), a different in-virtue-of property needs to be chosen from the context. Therefore, the exceptions to the generic sentence cannot be determined by the linguistic material in the sentence alone.

I am not quite convinced that Greenberg’s criticism is entirely valid. Drewery’s (1998) account seems to be able to capture the different in-virtue-of properties proposed by Greenberg indirectly. Example (86) contains the deictic spatial adverbial *in this place*. Consequently, Drewery’s account predicts that the function  $N_{F,G}$  that determines the non-exceptional individuals does not only depend on the properties denoted by *woman* and *does-not-walk-alone-outside*, but also on the location denoted by *this place*.

- (87) *A woman in this place doesn’t walk alone outside.*
- a. *this place* =  $A$ :  $N_{\text{woman} \ \& \ \text{in } A, \ \text{does-not-walk-alone-outside}}$
  - b. *this place* =  $B$ :  $N_{\text{woman} \ \& \ \text{in } B, \ \text{does-not-walk-alone-outside}}$
  - c. *this place* =  $C$ :  $N_{\text{woman} \ \& \ \text{in } C, \ \text{does-not-walk-alone-outside}}$

As Drewery shows, restrictive modifiers, like frame-setting material, may have the specific effect of inducing specialized rules. Therefore, if women in location  $A$  do not walk alone outside because of the violence, this will not affect the rule about women in location  $B$ , who do not walk alone outside because they live in a particularly religious town. And analogously, the rule about women in location  $C$  is independent of the rules for other locations. Hence at least for (86), Greenberg’s criticism of Drewery’s account is not justified.

Greenberg’s formalization of IS generics and BP generics has some problematic aspects that need to be addressed. In my opinion, the following four problems arise.

First, the truth-conditions for generic sentences proposed above depend on the world of evaluation only indirectly; dependence on the world of evaluation is only brought in by the presupposed conditions. Note that the world of evaluation  $w$  does not feature in the formula that is intended to capture the general meaning of generic sentences, repeated in (88).

$$(88) \quad \forall w'[\forall x[P(x)(w') \rightarrow S(x)(w')] \rightarrow \forall x[P^{X_P}(x)(w') \rightarrow Q(x)(w')]]$$

The central issue is that dependence on the world of evaluation via presupposed requirements is not enough to model the contingency of generic statements. Presuppositions cannot ensure that a given statement can be true in some possible worlds and false in others: given (88), a generic sentence has no truth value in contexts for which the requirements for  $S$  are not met, and has a uniform truth value in all other contexts in which the requirements are met.<sup>55</sup>

The second property concerns the different modal flavors observable for generic sentences. Greenberg argues that the different flavors for generic sentences discussed in Section 3.3.1 are brought in via the association requirement. However, the specific modal flavor which is used to check this requirement is not inherited by the in-virtue-of accessibility relation. After the association requirement for the in-virtue-of property  $S$  is checked, it is established that for all worlds  $w' \in B_w \subseteq W$ , which are accessible in some specific way,  $\forall x[P(x)(w') \rightarrow S(x)(w')]$  holds. In the truth-conditional content given in (88), the specific accessibility relation  $B_w$  is not included. The association requirement only ensures that the set of worlds that are accessible via the in-virtue-of accessibility relation is a superset of the set of accessible worlds  $B_w$  in the association requirement. Thus, the in-virtue-of accessibility relation does not reflect the specific “flavor of modality” used for  $B_w$ , either.

The third problem arises with the formulation of the reasonable causation requirement. The in-virtue-of property seems to be introduced to “span the bridge” between the subject property  $P$  and the matrix predicate  $Q$ . The association relation ensures that there is previous experience, or some set of rules that link the restrictor property  $P$  to the in-virtue-of property  $S$ . However, the reasonable causation requirement does not link the in-virtue-of property  $S$  to the matrix property  $Q$  in a way that a transitive link between  $P$  and  $Q$  is formed.

Consider the accessibility relations involved in the two requirements: The association requirement considers all worlds in the contextually determined set  $B_w$ ; the reasonable causation requirement looks at the maximally similar worlds. Since the set  $B_w$  for the association requirement may be determined relative to prioritizing modal flavors in the sense of Portner (2009) (cf. Section 3.2),  $B_w$  may be disjoint from the set of maximally

<sup>55</sup>Or alternatively, it could be assumed that in those contexts in which the requirements are not met the sentence is false—depending on the theory of presuppositions that is adopted.

similar worlds. Hence: Even though the set of accessible worlds picked by the in-virtue-of accessibility relation is a superset of  $B_w$ , it cannot be ensured that this set and the set of maximally similar worlds have a non-empty intersection. Consequently, the two requirements do not ensure that the in-virtue-of property  $S$  forms a link between  $P$  and  $Q$ .

Moreover, the formulation of the reasonable causation requirement does not capture the intuition that there is a principled connection between  $S$  and  $Q$ . The link between the two properties is only required to exist in one, single world that is most similar to the world of evaluation. In this world, this link may, however, be completely accidental. To evade this problem, it seems to me, that the reasonable causation requirement needs to be modelled similar to the association requirement, i.e. with universal quantification over relevantly accessible worlds.

The fourth and last problem concerns Greenberg's adaptation of Kadmon and Landman's (1993) proposal. Greenberg modifies their supervaluation account in a non-standard fashion. She argues that the in-virtue-of property  $S$  and the set  $v - v_0$  used to determine  $X_P$  may receive an "arbitrary value" that obeys the respective restrictions. The possibility to chose any arbitrary value among many possible values is intended to model the vagueness associated with exceptions and the accessibility relation for BP generics. It is unclear to me, though, how this account captures vagueness in the way that a supervaluationist proposal does. If there are various potentially different values for  $S$  and  $v - v_0$ , but no specific value is chosen, how can the meaning of generic sentences ever be computed? Regarding the choice of in-virtue-of property  $S$  for BP generics, Greenberg elaborates her idea that no specific property can be chosen among a set of possible/plausible in virtue of properties. She states that "we end up with multiple propositions [...], and thus with multiple sets of accessible worlds, each of them represents one way of making the accessibility relation precise" (Greenberg 2007:162). Again, it is unclear to me whether these multiple propositions also vary with respect to the different choices for  $v - v_0$ , and if they do, whether all of the sentences are evaluated to determine the truth of a generic sentence. This also remains an open question: How is the truth of a generic sentence determined from a set of propositions in Greenberg's (2007) system? This is an important aspect which is not addressed explicitly.<sup>56</sup>

One final remark regarding Greenberg's example in (75) needs to be made: I believe that (75) needs to be considered with caution. It seems to me that *Gen* can only be restricted by a covert "contextually" given property in some cases, and only if the relevant set of entities is made salient verbally in the previous discourse context. That is, Greenberg's example can be understood as restricted to professors at a salient university, but only if the topic of the discourse has been explicitly restricted to this

<sup>56</sup> Note that in Greenberg (2003), Kadmon and Landman's (1993) original proposal is adopted without any modifications.

location. Crucially, the examples in (75) cannot be understood out of the blue, even if the extra-linguistic context is appropriate:

- (89) a. (Context: There are professors and students in this university.)  
*A professor wears a tie./ Professors wear a tie.*  
 (Can mean: A professor in this university wears a tie.)  
 (Greenberg 2007:134)
- b. *In this university, a professor wears a tie.*

This cautionary note is also supported by the following observation on linguistically given restrictions. Consider the following scenario.

**Scenario:** A and B stand in front of a cage with lions and tigers. All of the lions lost one leg, but the tigers are healthy. A and B explicitly talk about the animals in the cage.

- (90) a. *A: Look at these beautiful cats. Lions have three legs.*
- b. *A': In this cage, there are two kinds of feline predators. Lions have three legs.*
- c. *A'': ?There is a rule regarding the number of limbs for the two kinds of feline predators in this cage. Lions have three legs. And tigers have four legs.*

While the generic sentence *lions have three legs* in A and A' is still interpreted as unrestricted, i.e. as a rule for lions in general<sup>57</sup>, the sentence can be understood as restricted in A'' (the example is still marginal, though). In A'', the first sentence crucially differs from those in A and A' since it announces the existence of general rules for the individuals in the cage. Hence, *lions have three legs* is understood as one of these rules (the same is true for 'a lion has three legs').

A general requirement for explicit contextual restrictions of generic sentences therefore seems to be that the generic sentence has to express a plausible rule for the restricted context. The exact conditions that govern explicit contextual restriction of generic sentences, though, need to be left for further research.

### 3.3.5 Choosing a modal account for *Gen*

In the previous three subsections the modal accounts for generic sentences in Krifka et al. (1995), Drewery (1998), and Greenberg (2007) have been presented, and discussed in detail. Since the aim of this section was to find an alternative account to Krifka et

<sup>57</sup>Note that in A', the functional reading of the bare plural is also available, and possibly preferred (cf. Condoravdi 1994).

al.'s proposal adopted in Chapter 2, Drewery's and Greenberg's accounts were evaluated with respect to the two desiderata for modal accounts introduced in Section 3.3.2:

- The set of accessible worlds needs to depend on (at least) the subject property.
- Universal quantification over individuals needs to be restricted by a genericity-specific, in-built restriction.

Which of the two more recent proposals should be adopted then? Drewery (1998) and Greenberg (2007) propose the same basic structure for generic sentences of the form *Fs are G* or *an F is a G*, see (91).

$$(91) \quad \forall w' \in R_w \forall x [F(x)(w') \& N(x)(w') \rightarrow G(x)(w')] \\ \text{where } R \text{ models the accessibility relation and } N \text{ the restriction on the domain} \\ \text{of individuals}$$

Both proposals also include the following two aspects which fulfill the two desiderata above: (i) the set of accessible worlds that is considered to evaluate a generic statement is made sensitive to the given subject property and the matrix predicate, and (ii) the dependence of exceptions to an interacting set of rules is explicitly modelled.

The two proposals, however, differ with respect to the specific proposals for the accessibility relation  $R$  and the restriction component  $N$ . While Drewery (1998) assumes that  $N$  is a primitive function  $N_{F,G}$  that is determined by a body of interconnected rules, Greenberg (2007) proposes an elaborate analysis of how these rules interact.

As shown above, both accounts are not without problems. However, for the remainder of this thesis, I adopt the modal account for generic sentences in Drewery (1998) in its proposed adaptation to a system with explicit world variables. This choice is motivated by the following points: even though Greenberg's account is conceptually more elaborate, the additional layer of vagueness that is introduced to model the difference between IS generics and BP generics goes beyond what is needed at this point. Given the problems identified for Greenberg's formalization, her formal system is also, to my mind, not sufficiently worked out to be adapted straightforwardly.

## 3.4 Modals as binders?

### 3.4.1 Initial considerations

In Chapter 2 following previous results in the literature on impersonal pronouns and impersonal readings of personal pronouns, three (types of) binders for the variable contributed by these pronouns were discussed: (i) the generic operator *Gen*, (ii) existential closure, and (iii) adverbs of quantification. The choice of binders is connected to the different readings of *ich*, *du*, and *man* (cf. Section 2.2 and 2.5.3).

In Chapter 1, the frequent presence of co-occurring modals (with or without an additional conditional structure) was noted (cf. Section 1.3), and it was observed that overt modal elements have a supporting effect on the availability of the impersonal use. This suggests that the modals found in the data play a part in deriving the impersonal readings. At least superficially, the meaning of modals as expressions of necessity and possibility are compatible with the observation that sentences containing impersonally interpreted *ich*, *du*, or *man* express rules, norms, or regulations (cf. Section 3.2). So far, however, the modals' contribution to the intensional sentential context of the impersonal reading was left aside. This section aims to fill this gap and to investigate whether, in addition to the generic operator *Gen*, overt modals can act as binders for the free variable contributed by impersonally used *ich*, *du*, and *man*.

In Section 3.2.1, the class of quantificational modals was introduced. The characterizing property of these modals is that they show quantificational variability effects with indefinite noun phrases like adverbs of quantification (Lewis 1975). Hence, if modals can in principle bind the free variable contributed in the impersonal uses, the class of quantificational modals would be the first class to investigate further.

Still, even if quantificational modals are possible binders, two different analyses for sentences containing an impersonal use of *ich*, *du*, or *man*, and an overt modal element need to be considered. Consider the two accounts sketched in (92).

- (92) a. **One-operator account:** If an overt modal is present, it binds the free variable contributed by impersonally interpreted pronouns. Else, if no overt modal is present in the sentential context, the variable is bound by the covert generic operator.
- b. **Two-operator account:** The variable contributed by impersonally interpreted pronouns is always bound by a covert generic operator. Hence, even though co-occurring overt modals could in principle act as binders, they never actually bind these variables.

Before discussing which of these two analyses captures the data presented for the impersonal uses in Chapter 1, the class of quantificational modality, which originated in Heim (1988 [1982]), is introduced in greater detail.

Heim (1988 [1982]) analyzes indefinite expressions as contributing free variables that are bound either by operators higher up in the sentence, or via existential closure at discourse level. She lists modals among the possible binders for these free variables, and proposes that some modals can unselectively bind free variables in their syntactic scope. Heim observes that the result of this binding configuration are quantificational variability effects as observed between indefinite expressions and adverbs of quantification in Lewis (1975).

Lewis (1975) notes that in some cases adverbial quantification shifts from quantifying

over times/situations/events to express quantification over cases/individuals. Lewis gives the example in (93).

- (93) *A quadratic equation usually has two different solutions.*  
 ~ ‘Most quadratic equations have two different solutions.’

The quantificational variability reading of (93) is the result of the adverb of quantification *usually* quantifying over individual quadratic equations, instead of situations or events.

Heim (1988 [1982]) argues that the modals in (94) behave similarly in that they bind the variable contributed by *a cat* and *a woman’s coat* in addition to a world variable.

- (94) a. *If a cat is exposed to 2,4-D, it must be taken to the vet immediately.*  
 b. *If a woman’s coat is missing from the coat rack, she may have gone out.*  
 (Heim 1988 [1982]:171)

For instance, (94-a) is interpreted as ‘*All cats that are exposed to 2,4-D must be taken to the vet immediately*’.

To model modals as unselective binders, Heim adapts the semantics for modals proposed in Kratzer (1981a). The proposal is given in (95) in the notation introduced in Section 3.2.

- (95) a.  $\llbracket \textit{must/müssen} \rrbracket^{c,g,w} = \lambda p_{\langle s,t \rangle} . \forall w' \in O(\mathbf{f}, \mathbf{g}, w)[p(w')]$   
 b.  $\llbracket \textit{can/können} \rrbracket^{c,g,w} = \lambda p_{\langle s,t \rangle} . \exists w' \in O(\mathbf{f}, \mathbf{g}, w)[p(w')]$

Heim modifies (95) to make modals sensitive to free variables contained in their propositional argument. That is, whenever modals take a proposition  $p$  containing free variables,  $x_1, \dots, x_n$ , as their argument (this is written as:  $p[x_1, \dots, x_n]$ ), the quantifier may unselectively bind these variables in addition to the obligatory world variable. This results in the truth conditions in (96).

- (96) a.  $\llbracket \textit{must } p[x_1, \dots, x_n] \rrbracket^{w,c,g} = 1$  iff  
 $\forall w' \in O(\mathbf{f}, \mathbf{g}, w) \forall x_1, \dots, x_n [p[x_1, \dots, x_n](w')]$   
 b.  $\llbracket \textit{can } p[x_1, \dots, x_n] \rrbracket^{w,c,g} = 1$  iff  
 $\exists w' \in O(\mathbf{f}, \mathbf{g}, w) \exists x_1, \dots, x_n [p[x_1, \dots, x_n](w')]$

Heim’s analysis of the cases in (94) has been challenged by Chierchia (1995b) and Brennan (1997), who both argue that the two sentences are in fact conditional generic sentences (cf. Appendix A3). Brennan proposes two tests to check whether an interpretation for sentences like (94) is the result of quantificational variability effects arising between the modal and the indefinite expression, or whether they are the result of the generic operator binding the variable contributed by the indefinite expression.

- (97) *Covariance test*: Does the quantificational force found with the indefinite expression change when the modal force is changed? If yes, one can assume that the variable is bound by the modal.
- (98) *Counterfactual entailment test*: Generic quantification supports counterfactual entailments (cf. Section 3.3), but unselective binding by the modal does not. Therefore, if appropriate counterfactuals are entailed, the variable contributed by the indefinite expression is bound by a generic operator rather than the modal.

The first step of testing for quantificational variability between modals and indefinite expressions is to apply the covariance test. If no covariance is observed, the counterfactual entailment test can then be used to check whether the sentence should be analyzed as a generic sentence.

Brennan (1997) applies these tests to different sets of data, and concludes that the examples in (99) involve unselective binding by the modals *will* and *can*.

- (99) a. *A basketball player will be short.*  $\sim$  ‘All basketball players are short.’  
 b. *A basketball player can be short.*  $\sim$  ‘Some basketball players are short.’

When the modal *will* is substituted by *can*, or *vice versa* in (99), the quantificational force of the indefinite changes, as well. Hence, the modals are taken to act as binders. And indeed, no counterfactual entailments arise for these sentences. This is illustrated for the second example in (100).

- (100) *A basketball player can be short. #Therefore: If I were a basketball player, I could be short.*  
 (Brennan 1997:168, reuses Heim’s examples)

The test results for the modals in Heim’s examples in (94) crucially differ from those for (99): the modals in (94) do not seem to act as unselective binders of the indefinite expression *a cat* occurring in their scope. First, no covariance can be observed when *must* is replaced by *may*.<sup>58</sup>

- (101) a. *If a cat is exposed to 2,4-D, it must be taken to the vet immediately.*  
 b. *If a cat is exposed to 2,4-D, it may be taken to the vet immediately.*

And second, the examples in (101) are general statements about cats that are exposed to 2,4-D. This is supported by the availability of the counterfactual entailment shown in (102) for (101-b).

<sup>58</sup>2,4-Dichlorophenoxyacetic acid (2,4-D) is a pesticide/herbicide. It is the most widely used herbicide in the world, and the third most commonly used in North America. Source: <http://www.24d.org/>

(102) *If a cat is exposed to 2,4-D, it may be taken to the vet immediately. So, if Sienna were a cat who had been exposed to 2,4-D, she could be taken to the vet immediately.*

(Brennan 1997:168)

Consequently, Brennan (1997) suggests that in (94), the generic operator scopes over the modal, and binds the free variable provided by the indefinite noun phrase. This analysis captures the lack of covariance, and the support of the counterfactual entailment in (102).

Given that cases like (94) and (99) exist, Brennan concludes that modals are sometimes (but not always) able to bind free variables contributed by indefinites. Binding only occurs in those cases that involve real quantificational modals. Picking up Brennan's and Chierchia's results, Portner (2009) suggests that the only English modals for which quantificational uses are observable are *can* and *will*.

In sum, even though Heim's initial proposal that all modals can act as unselective binders has been shown to be empirically inadequate—her examples in (94) involve the generic operator—*some* modals can interact with free variables contributed by indefinite expressions. In those cases, quantificational variability effects similar to those with adverbs of quantification arise.

Hence for the data presented in Chapter 1, it has to be determined whether those sentences that contain overt modals can be grouped with cases like (94) or with cases like (99). Crucially, this differentiation coincides with the two accounts sketched in (92) above.

Before this investigation is conducted in the following subsection, a final consideration has to be addressed that links this section to the data discussion in Section 1.2. There it was argued that sentences containing impersonally used personal pronouns have to be classified as generic sentences, which was illustrated on the basis of a few naturally occurring examples. So why even discuss the issue of modality here? Since the claim in Section 1.2 was not supported by a detailed presentation of conclusive evidence, this second part of Chapter 3 aims to provide the full empirical basis for this claim. Furthermore, I aim to spell out the resulting intensional sentential contexts for the impersonal uses in detail.

### 3.4.2 Identifying the overt modals found with impersonal uses

The aim of this section is to decide whether the one-operator or the two-operator account sketched in Section 3.4.1 captures the truth-conditional content of sentences containing impersonally used *ich*, *du*, or *man* and an overt modal. The first step that is needed is to identify and analyze the overt modal elements found in the data. Specifically, the range of modal interpretations that these elements receive in their

contexts is of interest.<sup>59</sup> To save space, the full range of modal interpretations found in the data is only illustrated in detail for impersonally used first person singular *ich*. These results also apply to the impersonal use of *du*, and since the impersonal use of *man* is in general less restrictive (cf. Chapter 1), though it is to be expected that the modal interpretations found with *ich* and *du* do not exhaust the possibilities for *man*. Hence, further work might be needed to discuss the full range of modal elements that can co-occur with *man*.

A detailed investigation of the collected data reveals that the modal interpretations found with impersonally used *ich* are ability, teleological, bouletic, stereotypical, and deontic interpretations. These types of interpretation are not equally frequent, though. The predominant modal interpretation has a deontic flavor based on either a legal or a moral body of rules. The following two examples illustrate discussions of legal matters.

- (103) *Ich kann als Ehepaar bis zu 300.000 Euro auf Tagesgeld anlegen ohne Zinssteuer zu zahlen.*  
 I can as married-couple up-to 300.000-Euro as overnight-loan  
 put without tax-on-interest to pay  
 ‘As a married couple, one can put up to 300.000 Euros as an overnight loan without paying tax on the resulting interest.’<sup>60</sup>

- (104) *Ich muss als Verbaucher ja auch nicht überprüfen, ob das Kino mir eine Schwarzkopie präsentiert.*  
 I must as customer PRT also not check whether the  
 movie-theater me a pirated-copy screen  
 ‘As a customer, one also doesn’t have to check, whether the movie theater screens a pirated copy.’<sup>61</sup>

The example about bridal-couples illustrates a deontic possibility modal that is intuitively understood as relative to the customs that the speaker assumes to hold.

- (105) *Ich kann doch als Brautpaar nicht von meinen Gästen erwarten, dass sie mir quasi die Feier finanzieren!*  
 I can PRT as bridal-couple not from my guests expect that  
 they me more-or-less the party pay-for  
 ‘As a bridal couple, one can’t expect the guests to pay for one’s party!’<sup>62</sup>

For the examples in (106)–(109), the intuition is that they illustrate bouletic, teleological, stereotypical, and ability interpretations.

<sup>59</sup>Note that determining the exact type of modal interpretation that was intended by the speaker is close to impossible (cf. Kratzer 1991). The assignment of readings is based on my personal intuitions, and reflect the intuitive best fit in the context.

<sup>60</sup><http://www.wallstreet-online.de/diskussion/1139180-1-10/uniopti-4>

<sup>61</sup><http://www.gutefrage.net/frage/kino-to-legal-oder-nicht>

<sup>62</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

**In view of:** a community's wishes for a modern, efficient infrastructure... (*bouletic*)

- (106) *Ich muss halt als "Allgemeinheit" bereit sein, mir meine Infrastruktur auch etwas kosten zu lassen.*  
 I must PRT as community willing be me my infrastructure  
 also something expense to let  
 'A community has to be willing to pay a certain price for its infrastructure.'<sup>63</sup>

**In view of:** the goal of a sports association to attract more talent... (*teleological*)

- (107) *Ich muss doch als Verband den Wettbewerb fördern, um eine höhere Talentdichte zu bekommen.*  
 I must PRT as sports-association the competition boost in-order-to  
 a higher talent-amount to get  
 'A sports association has to boost the competition to attract a higher amount of talent.'<sup>64</sup>

**In view of:** the usual way things involving money go... (*stereotypical*)

- (108) *Ich kann doch als Kunde nicht immer davon ausgehen, dass alles seriös abläuft.*  
 I can PRT as customer not always that-from assume that  
 everything legitimately go-on  
 'A customer shouldn't always act on the assumption that everything is handled legitimately.'<sup>65</sup>

**In view of:** the abilities of system administrators...<sup>66</sup> (*ability*)

- (109) *Ich kann als Sysadmin ein Zertifikat generieren und wahrscheinlich allen meinen Usern im Mozilla installieren, ohne dass die das merken.*  
 I can as system-administrator a certificate generate and  
 probably all-of my users in Mozilla install without that  
 they that notice  
 'A system-administrator can generate a certificate, and probably install it in Mozilla for all of his users without them noticing.'<sup>67</sup>

The modal readings illustrated above are predominantly non-realistic root interpretations (cf. Section 3.2). The only exception to this generalization is the one instance of an ability reading in (109). The examples in (110)–(112) briefly illustrate that for

<sup>63</sup>[http://derstandard.at/plink/1226067142914?sap=2&\\_pid=11193953#pid11193953](http://derstandard.at/plink/1226067142914?sap=2&_pid=11193953#pid11193953)

<sup>64</sup><http://www.faz.net/aktuell/sport/sportpolitik/im-gespraech-michael-gross-das-geht-an-den-kern-des-schwimmsports-1830306.html>

<sup>65</sup><http://www.tagesspiegel.de/berlin/berliner-bankkunden-ich-kann-schliesslich-auch-auf-der-strasse-ueberfallen-werden/1397144.html>

<sup>66</sup>This is the only ability reading I found the collected data.

<sup>67</sup><http://www.ntzl.org/604481-https-proxy>

impersonally interpreted *du*, the co-occurring overt modals show the same array of readings.

**In view of:** the right way to act as an artist... (*deontic*)

- (110) *Du musst als Künstler ja auch mit deinen Gefühlen haushalten.*  
 you must as artist PRT also with your emotions economize  
 ‘An artist has to be economical with his emotions.’<sup>68</sup>

**In view of:** a team’s goal to win against their opponents... (*teleological*)

- (111) *Du musst als Mannschaft einfach mehr gewinnen wollen als der*  
 you must as team simply more win want than the  
*Gegner.*  
 opponent  
 ‘A team has to simply want to win more than their opponent.’<sup>69</sup>

**In view of:** the way judging at dance events is usually done... (*stereotypical*)

- (112) *Du musst als Paar richtig gut aussehen, das gibt Pluspunkte.*  
 you must as pair really good look that gives advantage  
 ‘A pair has to look really well, that’s of advantage.’<sup>70</sup>

For modals co-occurring with impersonally used *ich* and *du*, epistemic readings seem to be completely unavailable. Consider the example in (113), for which the given context is constructed to support the epistemic reading of the possibility modal *kann*.

**Context:** The speaker learns that cows get sick when they are not milked daily. Furthermore, farmers are required by law to keep their cows healthy. Thinking about the implications of this new information, he says:

- (113) *Ich kann als Bauer täglich meine Kühe melken.*  
 I can as farmer daily my cows milk

In this context, the generalization *farmers milk their cows daily* is compatible with, and may be inferred by the addressee from the two assumptions about cows and laws for farmers—a prerequisite for the epistemic interpretation. Nevertheless, informal speaker surveys showed that the sentence cannot be readily understood as *in view of my (newly acquired) knowledge, it is possible that farmers milk their cows daily*. That is, the modal is not interpreted epistemically.<sup>71</sup>

<sup>68</sup><http://www.france-delon.de/buch4.htm>

<sup>69</sup><http://www.netzathleten.de/Sportmagazin/Star-Interviews/Interview-mit-Eishockey-Bundestrainer-Uwe-Krupp-Besser-spielen-als-in-Bern/5761358233643659016/head>

<sup>70</sup><http://www.welt.de/die-welt/sport/article6462288/Tanzende-Exoten.html>

<sup>71</sup>A possible counterargument to this reasoning is to say that the deontic reading that is intuitively understood is “primed” in some sense by the second premise involving laws about farmers. However, if there were a preference to keep the interpretations of modals constant, no two modals with different

The intuition that only root modal interpretations are available for modals that co-occur with impersonally interpreted personal pronouns is also supported by the following three observations.

First, sentential negation is interpreted as having scope over the modal. As discussed in Section 3.2, epistemic modals tend to scope above negation, and root modals below negation. Consider examples (104) and (105). In both examples, the modals *können* and *müssen* are interpreted below *nicht*. However, since higher scope for sentential negation relative to non-epistemic modals is only a general tendency, this observation might not provide a decisive criterion.

The second observation is reported in Lauer (2010) among others: German *irgend-*indefinites are sensitive with respect to the interpretation of modals if they occur in their scope. In general, *irgend-*indefinites show two readings: (i) an ignorance reading, and (ii) an indifference/free-choice reading. The indifference reading is only available in case the indefinite is embedded under a non-epistemic modal, though. The ignorance reading is available for all modal interpretations. Example (114) illustrates an example for *irgend-* in an unembedded clause.

- (114) *Irgendein Student war heute in meinem Büro.*  
 IRGEND-a student was today in my office  
 Available: ‘A student (I don’t know who) was in my office today.’ (*ignorance*)  
 Unavailable: ‘A student (no matter who) was in my office today.’  
(*indifference*)

In contrast, the example in (115) is ambiguous between an ignorance and an indifference reading because *irgend-* occurs in the scope of deontic *müssen* (Engl. ‘must’).

- (115) *Ich muss irgendeinen Studenten betreuen.*  
 I must IRGEND-a student supervise  
 Available: ‘I have to supervise a student (I don’t know who)’ (*ignorance*)  
 Available: ‘I have to supervise a student (no matter who).’ (*indifference*)

The observation for sentences containing impersonal uses of *ich*, *du*, or *man*, is that if *irgend-*indefinites occur under an overt modal, they show an indifference reading. In example (116), this is even the preferred reading.

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interpretations would be allowed to co-occur in the same sentence—and maybe even in the entire discourse. That this is not the case is shown in (i).

- (i) *Peter must be at home, since he can’t stay out after 10pm.*

In (i), *must* is easily interpreted epistemically while *can* is given a deontic reading, e.g. according to the rules set by Peter’s parents.

- (116) *Ich muss doch als alleinstehender Bauer [irgendwen/irgendeinen Angestellten] haben, der mir hilft.*  
 I must PRT as single farmer IRGEND-someone/IRGEND-a employee have who me helps  
 ‘A single farmer has to have [someone/an employee] (no matter who), who helps him.’

The ignorance reading of (116), i.e. that a farmer has to have someone unknown to the speaker to help him is completely unavailable. Similarly, example (117) can also only be understood with an indifference reading of *irgendwelche Passagiere* (Engl. ‘random passengers’).

- (117) *Ich kann als Bahnschaffner doch nicht irgendwelche Passagiere aus dem Zug schmeißen.*  
 I can as conductor PRT not irgend-some passenger from the train throw  
 ‘A conductor can’t kick random passengers from the train.’

The third observation that supports the assumption that the modals in the data show only root interpretations is that the overt modals found in the data can be substituted by other modal verbs that are lexically restricted with respect to their interpretations. For example, the German modal *dürfen* (Engl. ‘be allowed to’) has been analyzed as a strictly prioritizing (i.e. non-epistemic, non-dynamic) possibility modal (cf. Grosz 2011). All of the possibility modals occurring in the examples above can be replaced by *dürfen* without a change in truth-conditional meaning. The only exception is example (109), where *können* has an ability reading.

In sum, the readings found in the collected data, and the native speakers’ intuitions about constructed examples with epistemic interpretations point towards the conclusion that those modals that co-occur with impersonally used *ich*, *du*, or *man* exclusively show non-epistemic readings. This means that, so far, the data is still compatible with the presence of quantificational modals to bind the variables contributed by impersonally used pronouns. Hence, the decision between the one-operator and the two-operator account is still open.

Whether epistemic readings are strictly incompatible with impersonally interpreted personal pronouns, or whether the lack of data may be explained by a (possibly pragmatic) restriction is left for further research.

### 3.4.3 One or two operators?

The aim of this subsection is to decide between the one-operator account and the two-operator account introduced in Section 3.4.1. The central question is whether one can find evidence to exclude a possible quantificational use for the co-occurring modals. The

arguments are based on the considerations about quantificational modality discussed in Section 3.4.1, and on the characterizing properties of generic sentences introduced in Section 3.3. To anticipate the result of the following discussion, the two-operator account repeated in (118) seems to be the more adequate analysis of the German data.

- (118) a. **One-operator account:** If an overt modal is present, it binds the free variable contributed by impersonally interpreted pronouns. Else, if no overt modal is present in the sentential context, the variable is bound by the covert generic operator.
- b. **Two-operator account:** The variable contributed by impersonally interpreted pronouns is always bound by a covert generic operator. Hence, co-occurring overt modals are never interpreted as binders for the variable, even if they could act as binders in principle.

As a first step, I apply Brennan's (1997) covariance test to the data. The dialogue in (119) illustrates the application of the test for the impersonal reading of *ich*.<sup>72</sup>

**Scenario:** A and B talk about German laws pertaining to farmers.

- (119) A: *Das Gesetz sagt, dass ich als Bauer meine Kühe manuell melken muss.*  
 the law says that I as farmer my cows manually milk  
*muss.*  
 must  
 'According to the law, a farmer must milk his cows manually.'
- B: *Das stimmt doch nicht! Paragraph zwei sagt, dass ich als Bauer meine Kühe auch maschinell melken kann!*  
 that be-true PRT not paragraph-two says that I as farmer  
*meine Kühe auch maschinell melken kann!*  
 my cows also in-an-automated-way milk can  
 'That's not true! In the second paragraph it says that a farmer can milk his cows also in an automated way.'

The two modals in A's and B's utterances are interpreted deontically with respect to the same body of law, i.e. the German law pertaining to farmers. The crucial observation regarding this dialogue is that both A and B talk about farmers in general, i.e. no covariance with *müssen* (Engl. 'must') and *können* (Engl. 'can') can be observed. B's utterance cannot be understood as 'According to the German law, some actual farmers milk their cows in an automated way', which would be expected if B's utterance were to involve a quantificational modal.<sup>73</sup> B's utterance can only mean that in view of the German law, farmers in general can milk their cows in an automated way (assuming they have some qualifying property that allows the application of the

<sup>72</sup>The same behavior can be observed for *du* or *man*.

<sup>73</sup>Heim's (1988 [1982]) proposal for modals as unselective binders also makes false predictions. That is, the sentence cannot be understood as 'According to the German law, some farmers can milk their cows in an automated way.'

second paragraph). In other words, the (quasi-)universal interpretation for *ich ... als Bauer* as ‘farmers in general’ in B’s utterance cannot be dependent on the overt modal co-occurring in the sentence.

A second observation that supports the two-operator account in a similar fashion is the behavior of the German modals that correspond to the English quantificational modals *can* and *will*, i.e. *können* (Engl. ‘can’) and *werden* (Engl. ‘will’). The German equivalents of Brennan’s quantificational modality examples in (120) and (121) are easily interpreted as showing quantificational variability effects between the indefinite singular noun phrase in subject position and the respective modal.

- (120) A: *You have a date with a basketball player tomorrow? I couldn’t date a basketball player! I don’t like men that are more than two meters tall.*  
 B: *Aber, ein Basketballspieler kann auch kleiner als zwei Meter sein.*  
 but a basketball-player can also smaller than two meters be  
 B: ‘But a basketball player can also be less than two meters tall.’

B’s answer in German, as well as in the English translation, is interpreted as ‘Some basketball players are less than two meters tall’. The analogous observation holds for example (120).

- (121) A: *I’m nervous about my blind date with a basketball player tomorrow. I usually don’t like tall men. Do you think he’ll be less than two meters tall?*  
 B: *Naja vermutlich nicht. Ein Basketballspieler wird größer als zwei Meter sein.*  
 well presumably not a basketball-player will taller than two  
 meters be  
 B: ‘I guess not. A basketball player will be more than two meters tall.’  
 ~ ‘All basketball players are more than two meters tall.’

Hence, the modals *kann* and *wird* have a quantificational interpretation, and show quantificational variability effects with indefinite singular noun phrases. If the indefinite singular noun phrase in (120) and (121) is substituted by *ich ... als Basketballspieler* (intended as an impersonal use), the quantificational modality reading becomes unavailable, though. Even if the same preparatory contexts are used as in (120) and (121), the modals *können* (Engl. ‘can’) and *werden* (Engl. ‘will’) cannot be understood in their quantificational use.

- (122) A: *You have a date with a basketball player tomorrow? I couldn’t date a basketball player! I don’t like men that are more than two meters tall.*  
 B: *Ich kann als Basketballspieler auch kleiner als zwei Meter sein.*  
 I can as basketball-player also smaller than two meters be

B's answer in (122) can only be read as 'Basketball players in general are allowed to be smaller than two meters'. An even stronger effect occurs in example (123). When *ich ... als Basketballspieler* is substituted for *ein Basketballspieler*, the impersonal reading for *ich* in combination with *werden* (Engl. 'will') is completely unavailable.

- (123) A: *I have a blind date with a basketball player tomorrow. Do you think he'll be less than two meters tall?*  
 B: #*Nein, ich werde als Basketballspieler größer als zwei Meter sein.*  
 no I will as basketball-player taller than two meters be

The only possible, but pragmatically odd interpretation for B's utterance is 'As a basketball player, I will be more than two meters tall.' This interpretation arises if *ich* is understood in its referential use and *werden* is interpreted as the auxiliary used to form future tense in German.

Based on these two observations, I conclude that covariance is not only unobservable for impersonally used *ich* and its co-occurring modals, but that it seems to be actively blocked by the impersonally used pronoun.

At this point, one might consider weakening the one-operator account to account for the invariant universal interpretation of the impersonal readings.

(124) **One-operator account (weakened):**

If an overt necessity modal co-occurs with impersonally used pronouns, it acts like a quantificational modal, and binds the free variable contributed by the pronouns. Else, the covert generic quantifier is introduced to bind the variables.

This weakened version divides sentences containing impersonally used pronouns into two classes. The first class contains all sentences with no overt necessity modals. These are uniformly interpreted as generic sentences. The second class comprises all sentences in which an overt necessity modal occurs. For these sentences, it is assumed (i) that the modal binds the variable contributed by the pronoun, and that (ii) the generalization involves strict universal quantification over individuals.

The weakened version of the one-operator account, however, still does not capture the semantic behavior of sentences containing overt necessity modals. It can be shown that these sentences have the characteristic properties associated with generic sentences. Specifically, they support inferences to appropriate counterfactuals, and allow for exceptions (cf. Section 1.2). The availability of counterfactual inferences is illustrated in (125).

- (125) *Ich muss als Bauer meine Kühe melken. Wenn Peter also ein Bauer wäre, müsste er seine Kühe melken.*  
 I must as farmers my cows milk if Peter therefore a farmer would-be, would-have-to he his cows milk  
 ‘A farmer must milk his cows. Therefore, if Peter were a farmer, he would have to milk his cows.’

Brennan’s (1997) counterfactual entailment test states that sentences that express generalizations, and that support inferences to appropriate counterfactuals should be analyzed as generic sentences. This predicts that a sentence that contains impersonally used *ich* and any type of co-occurring overt modal behaves like an ordinary generic sentence. An immediate consequence of this result is that these sentences always allow for exceptions; consider (126).

- (126) *Ich muss als Bauer meine Kühe melken.*  
 I must as farmers my cows milk  
 ‘A farmer must milk his cows.’

The exceptional individuals for the rule expressed in (128) are farmers who e.g. have hired help, or who ensure in some other way that their cows are milked.

This observation, to my mind, is the strongest argument for the two-operator account. In their quantificational modality use, necessity modals express strict universal quantification over individuals which does not allow for exceptions (cf. Heim 1988 [1982]; Brennan 1997; Portner 2009). Generically induced quasi-universal quantification is the only form of universal quantification that allows for exceptions. Therefore, the weakened one-operator account ceases to be a viable alternative.

In sum, the observations in this section point toward the conclusion that overt modals that co-occur with impersonally used *ich*, *du*, and *man* do not behave like quantificational modals. Consequently, the variables contributed by *ich*, *du*, and *man* are always bound by *Gen*. In other words, a two-operator account is necessary to capture the truth-conditions of sentences containing impersonally used pronouns and overt modals. This account correctly predicts that no covariance with the modal force of overt modals can be observed, and that sentences containing impersonal uses uniformly behave like generic sentences, as claimed in Chapter 1.

Note that the discussion in this section only excludes “conventional” quantificational modality as described in Brennan (1997) and Portner (2009). Quantificational modality of this sort seems to arise exclusively with *can* (Ger. ‘können’) and *will* (Ger. ‘werden’). It cannot be definitively ruled out that a special generic interpretation for the occurrences of *müssen* in the data exists in which the modals behave like the modal operator *Gen*.<sup>74</sup> In this special interpretation, *müssen* would have to act as an unse-

<sup>74</sup>I thank Magdalena Kaufmann (p.c.) for pointing this out to me.

lective binder for world and individual variables, and would have to contribute strictly universal quantification over worlds and quasi-universal quantification over individuals (cf. Section 3.3). While this option cannot be excluded, I argue that it is highly implausible that a generic interpretation should be available for necessity modals, but not for possibility modals even though they share the same modal flavor.

## 3.5 Spelling out the two-operator account

### 3.5.1 Determining the scope order

In this section, the details of the two-operator account argued for in Section 3.4 are investigated, and worked out formally. This task is connected with two challenges: First, one consequence of analyzing modals and the generic operator in possible worlds semantics is that theoretically, two scope orderings for *Gen* and overt modals are possible. And second, the modal analyses of *Gen* and the overt modals may interact in various ways with respect to the respective sets of accessible worlds.

This subsection aims to establish whether the generic operator and overt modals occur in a fixed scope ordering, or whether variable scope orderings are found. This investigation is conducted for bare plural generic sentences, which are the least restricted type of regular characterizing sentences (cf. Section 3.3), and overt non-epistemic modals (cf. Section 3.2.1). The epistemic interpretation of overt modals is only addressed briefly. A detailed investigation of the possible scope orderings between the generic operator and epistemic modals is beyond the scope of this thesis, though. The aim of Section 3.5.2 is to spell out the two-operator account formally. I investigate the interaction of the account for generic sentences proposed in Drewery (1998) (cf. Section 3.3) with the analysis for modals based on the work in Kratzer (1977, 1981a, 1991) (cf. Section 3.2).

Let us start with the investigation of the possible scope orderings for *Gen* and overt non-epistemic modals. Sentences of the form *Fs must/may be Gs* or *an F must/may be a G* technically allow for two scope orderings if a modal interpretation for *Gen* is assumed. The two possible orderings are schematically given in (127).<sup>75</sup>

- (127) a.  $Gen > MOD: Gen(F; MOD \cdot G)$   
 b.  $MOD > Gen: MOD \cdot Gen(F; G)$   
 for  $MOD \in \{\square, \diamond\}$

In the following discussion, I present three arguments for the first ordering,  $Gen > MOD$ , and against the second ordering,  $MOD > Gen$ , for modals that have one of the

<sup>75</sup>The notation ‘ $Gen(\dots; \dots)$ ’ is an abbreviation of the notation used in Krifka et al. (1995). The semicolon separates the restrictor and the scope of *Gen*.  $\square$  and  $\diamond$  symbolize necessity and possibility modals, respectively.

non-epistemic interpretations identified in Section 3.4. The arguments concern various interpretational aspects that are connected to the predictions made by the two scope orderings: (i) the set of exceptional individuals determined by the generic operator, (ii) the make-up of the set of accessible worlds associated with the overt modals, and (iii) the counterfactual inferences that are supported by the sentences.

The first argument is based on the intuitions regarding the set of exceptional individuals that is associated with generic sentences containing overt non-epistemic modals. Consider the examples in (128) for the necessity modal *müssen* (Engl. ‘must’) and the possibility modal *dürfen* (Engl. ‘may’); assume that *müssen* and *dürfen* are read deontically: “in view of the German law”.

- (128) a. *Bauern müssen ihre Kühe melken.*  
farmers must their cows milk  
‘Farmers must milk their cows.’ □
- b. *Bauern dürfen ihre Kühe melken.*  
farmers may their cows milk  
‘Farmers may milk their cows.’ ◇

If the sentences in (128) are considered for both orderings of the generic operator *Gen* and the modal, the following four readings in (129) and (130) (two readings per sentence) arise. Example (129) spells out the two readings for *Gen* > MOD.

- (129) a. *müssen*: For every relevantly non-exceptional farmer: in view of the German law, it is necessary that he milks his cows.
- b. *dürfen*: For every relevantly non-exceptional farmer: in view of the German law, it is permissible that he milks his cows.

Example (130) specifies the two readings for MOD > *Gen*.

- (130) a. *müssen*: In view of the German law, it is necessary: Every relevantly non-exceptional farmer is such that he milks his cows.
- b. *dürfen*: In view of the German law, it is permissible: Every relevantly non-exceptional farmer is such that he milks his cows.

In the form given above, the paraphrases of the readings for both orderings still appear to be indistinguishable, even logically equivalent variants. However, the readings given by the second ordering MOD > *Gen* in (130) are in fact much weaker than the readings for the ordering *Gen* > MOD in (129). This becomes clear when the set of non-exceptional farmers for the two orderings are determined.

As a reminder: in Drewery’s (1998) system, the set of individuals that are considered to be exceptions to a given generic statement depends on the restrictor *F* and the scope *G* of *Gen*. As a result, universal quantification over individuals in the relevant accessible worlds is restricted by  $N_{F,G}$ .

For (128), the set of non-exceptional farmers in the first ordering  $Gen > MOD$ —as spelled out in (129)—is determined with respect to a modal property. In the second ordering  $Gen > MOD$  as given in (130), the set of non-exceptional farmers is determined with respect to a simple, non-modal property. Compare the paraphrases in (131).

- (131) a.  $N_{F,G}$  for  $Gen > MOD$ : the set of relevantly non-exceptional farmers with respect to *the necessity of having to milk their cows*  
 b.  $N_{F,G}$  for  $MOD > Gen$ : the set of relevantly non-exceptional farmers with respect to *milking their cows*

Given the specific form of the exceptions determined for  $Gen$  in (131), (132) and (133) further specify how (129) and (130) are to be distinguished.

- (132)  $Gen > MOD$ :
- a. *müssen*: In general, farmers have a legal obligation to milk their cows. However, there may be farmers that count as legitimate exceptions for this legal obligation. That is, there may be exceptions to the application of the law.
- b. *dürfen*: In general, farmers are permitted by law to milk their cows. However, there may be farmers that count as legitimate exceptions for this legal permission. That is, there may be exceptions to the application of the law.
- (133)  $MOD > Gen$ :
- a. *müssen*: In view of the German law, it must be the case: all relevantly non-exceptional farmers with respect to milking their cows actually milk their cows. Whether exceptional farmers with respect to milking their cows actually milk their cows is not relevant. That is, the law expresses a necessity regarding the truth of a lawlike generalization.
- b. *dürfen*: In view of the German law, it may be the case: all relevantly non-exceptional farmers with respect to milking their cows actually milk their cows. Whether exceptional farmers with respect to milking their cows actually milk their cows is not relevant. That is, the law expresses a possibility regarding the truth of a lawlike generalization.

To make the set of exceptional farmers that is considered in the second ordering more precise, consider possible exceptions to the generalization expressed in (134).

- (134) *Farmers milk their cows.*

The exceptional farmers with respect to milking their cows are e.g. farmers who had an accident and are unable to do manual work; farmers who have a hired help for this

task; and farmers who are alcoholics, and, therefore, do not perform their duties. The reading derived by the second ordering states that all of these exceptional farmers with respect to milking their cows are irrelevant for the truth of the sentences in (128).

If sentences like (128-b) can be interpreted with respect to the second scope ordering, it is predicted that sentences like (135) express a consistent statement since they are interpreted as ‘ $\diamond Gen(F; G) \& \diamond Gen(F; \neg G)$ ’.<sup>76</sup>

- (135) #*Bauern dürfen ihre Kühe melken und Bauern dürfen nicht ihre Kühe melken.*  
 farmers may their cows milk and farmers may not their cows  
*melken.*  
 milk  
 Available: #‘According to the law: farmers are allowed to milk their cows and farmers are not allowed to milk their cows.’  $Gen > MOD$   
 Unavailable: ‘It is compatible with the law that farmers milks their cows, and that farmers do not milk their cows.’  $MOD > Gen$

The reading that is expected to arise if the second scope ordering were possible is unavailable, though. Example (135) can only be understood with the underlying logical structure ‘ $Gen(F; \diamond G) \& Gen(F; \neg \diamond G)$ ’. This structure represents the first scope ordering, and is logically inconsistent.<sup>77</sup>

Informal surveys of native speaker judgements are also consistent with the claim that only the first scope ordering is understood for sentences like those in (128). The interpretation determined by the second ordering is consistently judged as too weak to capture the intuitive meaning of these sentences; consider (136).

- (136) A: *Was sagt das deutsche Gesetz zu Bauern?*  
 what says the German law about farmers  
 ‘What does the German law say about farmers?’  
 B: *Bauern müssen ihre Kühe melken.*  
 farmers must their cows milk  
 ‘Farmers must milk their cows.’  
 B’: *Bauern dürfen ihre Kühe melken.*  
 farmers may their cows milk  
 ‘Farmers may milk their cows.’

<sup>76</sup>I thank Magdalena Kaufmann (p.c.) for pointing this out to me.

<sup>77</sup>Note that if the example in (135) is changed minimally, a consistent reading arises that involves the first ordering. Consider (i) (upper case marks contrastive focus).

- (i) *Bauern dürfen ihre Kühe melken und Bauern dürfen ihre Kühe NICHT melken.*  
 farmers may their cows milk and farmers may their cows not milk  
 Available: ‘According to the law: farmers are allowed to milk their cows and farmers are allowed to not milk their cows.’  $Gen > MOD$

The underlying logical structure is ‘ $Gen(F; \diamond G) \& Gen(F; \diamond \neg G)$ ’, i.e. focus forces sentential negation to be interpreted below the deontic possibility modal. This results in a consistent reading.

B and B' in (136) are intended to express statements regarding the necessary or possible truth of a generic sentence according to the German law; A's question biases the reader towards this interpretation. However intuitively, neither B nor B' communicate that the German law has a particularly weak stance on farmers milking their cows (given by the second ordering). Instead, B and B' are understood as stating that farmers in general have the legal obligation/the legal right to milk their cows (given by the first ordering). Hence, even with contextual help, the second ordering seems to be unavailable.

For the naturally occurring examples discussed in Section 3.4, only the first scope ordering, *Gen* > MOD, is understood, as well. Consider (137)–(139).

**In view of:** the wishes of farmers regarding the health of their cows... (*bouletic*)

- (137) *Bauern müssen ihre Kühe melken.*  
farmers must their cows milk  
'Farmers must milk their cows.'

**In view of:** the goal of sports associations to attract more talent... (*teleological*)

- (138) *Verbände müssen doch den Wettbewerb fördern.*  
sports-associations must PRT the competition boost  
'Sports associations have to boost the competition.'

**In view of:** the abilities of system administrators... (*ability*)

- (139) *Systemadministratoren können ein Zertifikat generieren.*  
system-administrators can a certificate generate  
'System-administrators can generate a certificate.'

According to native speaker judgements, these three sentences cannot be interpreted as the statements in (140), which paraphrase the second MOD > *Gen* order.

- (140) a. In view of the wishes of farmers regarding profit and health of their animals, it is necessary that every relevantly non-exceptional farmer with respect to milking his cows milks his cows.  
b. In view of the goal of sports associations to attract more talent, it must be the case: Every relevantly non-exceptional sports association with respect to boosting the competition boosts the competition.  
c. In view of the abilities of system administrators, it is possible: Every relevantly non-exceptional system administrator with respect to generating a certificate generates a certificate.

A second consideration that points towards the first ordering involves the observation in Hacquard (2006) that non-epistemic modal interpretations are usually subject-

dependent. For generic sentences containing overt modals, it could be assumed that for each relevantly non-exceptional individual the laws, wishes, goals, and abilities are considered relative to each specific non-exceptional individual. If this were the case, it could be assumed that the generic operator binds an individual variable inside the accessibility relation. A binding relation of this kind would, of course, only be possible if the modal is in the scope of the generic operator. This assumption is schematically represented in (141).<sup>78</sup>

$$(141) \quad \text{Gen}_x(F; \text{MOD}_{[x]} \cdot G)$$

Unfortunately, no clear arguments can be given that (141) is necessary to account for the data.

Kaufmann (2012) discusses the possibility for accessibility relations to depend on a quantificational subject. For instance, she investigates whether the abilities considered for the interpretation of the modal in (142) need to be determined relative to each single individual in the domain of the quantifier.

$$(142) \quad \textit{Nobody can play the guitar.} \qquad \textit{(ability)}$$

(Kaufmann 2012:78)

Kaufmann concludes that to capture the meaning of (142), it is not necessary to assume binding into the accessibility relation. Instead of considering different sets of abilities that vary with different individuals, Kaufmann suggests that the union of all individual sets could be assigned as a non-dependent, uniform accessibility relation, i.e. “in view of people’s abilities”.

This strategy of unifying individually determined accessibility relations is not available for all quantificational examples, though. Kaufmann provides the scenario and example in (143).

**Scenario:** Assume a set of pairwise unrelated children all of whose parents are very ambitious with respect to their sons’ and daughters’ sportive success. Two of the children, namely Hans and Fritz, are good sprinters. Both Hans’ and Fritz’ parents want by all means that their son win the 100m-sprint. The other children are specialized in other disciplines, consequently their parents do not care so much about the 100m-sprint.

$$(143) \quad \textit{Genau zwei Kinder sollen gewinnen.}$$

exactly two children should win  
‘Exactly two children should win.’

(Kaufmann 2012:79)

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<sup>78</sup>The notation  $\text{MOD}_{[x]}$  expresses that the individual variable  $x$  occurs in the accessibility relation of the modal operator MOD.

In this scenario, the wishes of Hans' and Fritz' parents are inconsistent. This means that the sets of wishes of all parents cannot be unified. From this, Kaufmann concludes that binding into the accessibility relation for modals occurring under a quantificational subject might be needed, after all.<sup>79</sup>

In contrast to (143), the generic sentences about farmers in (128) do not force the analysis that the generic operator binds into the accessibility relation. The law that is considered for the deontically interpreted modals is the same for all farmers, and consequently, no inconsistencies arise if a unified accessibility relation is assumed. Similarly, the wishes, goals, and abilities of the relevantly non-exceptional individuals considered in the examples in (137)–(139) *prima facie* do not stand in conflict with each other, and may therefore be considered in conjunction. So in sum, the subject-dependence of the non-epistemic overt modals found in the data cannot be used as a conclusive argument for the *Gen* > MOD order.

However, one observation can be made on the basis of these considerations. It seems to be the case that the laws, wishes, goals, and abilities that are considered when the sentences in (128) and (137)–(139) are evaluated are assumed to be shared by all relevantly non-exceptional individuals. For example, intuitively, the statement about sports associations in (138) can only be understood in the sense that all non-exceptional sports associations share the same goals. Example (138) cannot be understood as saying that the associations' goals that are at the heart of the necessity to boost the competition differ for each individual non-exceptional sports association. That is, in some sense the accessibility relation is “generic”, as well.

The last consideration that supports the claim that *Gen* > MOD is the only possible interpretation, concerns the counterfactual inferences that are expected to be supported. For the first scope ordering, the supported counterfactuals are predicted to be of the form in (144).

$$(144) \quad \textit{Gen}(F; \textit{MOD} \cdot G) \rightsquigarrow \text{'if } A \text{ were an } F, \text{ it would be a } \textit{MOD} \cdot G \text{'}$$

For the second ordering, the counterfactuals that are supported are expected to be of the form in (145).

$$(145) \quad \textit{MOD} \cdot \textit{Gen}(F; G) \rightsquigarrow \text{'MOD} \cdot [\text{if } A \text{ were an } F, \text{ it would be a } G \text{'}$$

All counterfactual statements that were discussed as supported by the data so far contained the same modal (interpreted with the same modal flavor) as the corresponding generic sentences. The same is the case for all generic sentences in this section. In fact, an even stronger observation can be made: The supported counterfactuals require not only that the modal flavor is the same as in the associated generic sentences, but

<sup>79</sup>Modals for which the accessibility relation contains a variable that varies with the subject of the modal statement are seen as instances of “personal modality”. Cf. Kaufmann (2012).

that the modal is interpreted against the same conversational backgrounds that are assigned to the modal base and the ordering source in the generic sentence. Example B in (136) contains a deontic modal that is interpreted in view of the German law. As claimed above, answer B supports only counterfactuals with the same deontically interpreted modal in the consequent, e.g. (146).<sup>80</sup>

- (146) *Wenn Peter ein Bauer wäre, müsste er seine Kühe melken.*  
 if Peter a farmer were, must.KONJ he his cows milk  
 ‘If Peter were a farmer, he would have to milk his cows.’

For the inference to the supported counterfactual in (146) to be felicitous, it has to be not only assumed that Paul falls among the relevantly non-exceptional farmers regarding the legal obligation under discussion, but that the obligation which is counterfactually assigned to Paul is assigned with respect to exactly the same body of law as is considered in the generic sentence. If the modal in the consequent is omitted, the resulting counterfactual does not follow from (136) any more.

What about the counterfactual inference associated with the second ordering? Example (147) gives the relevant counterfactual structure embedded under a modal element, cf. (145).

- (147) *Es ist notwendigerweise so, dass wenn Peter ein Bauer wäre, würde er seine Kühe melken.*  
 it is necessarily the-case that if Peter a farmer were, would  
 he his cows milk  
 ‘It is necessarily the case that if Peter were a farmer, he would milk his cows.’

The statement in (147) does not follow from B’s answer in (136), either. This lends further support to the claim that the ordering MOD > Gen is not available.

Analogous observations can be made for B’s answer in (136) in combination with modals of other non-epistemic modal flavors. The following examples illustrate the counterfactual entailments for B’s answer with a bouletic, a teleological, and an ability reading of the co-occurring overt modal in (137)–(139).

**In view of:** the wish of farmers to have healthy cows ... (bouletic)

- (148) *Bauern müssen ihre Kühe melken. Daher: Wenn Peter ein Bauer wäre, müsste er seine Kühe melken.*  
 farmers must their cows milk therefore if Peter a farmer were  
 müsste er seine Kühe melken.  
 would-have-to he his cows milk  
 ‘Farmers must milk their cows. Therefore, if Peter were a farmer, he would have to milk his cows.’

<sup>80</sup>Note that the combination of *würde* and *müssen* (Engl. ‘would have to’) becomes *müsste*.

**In view of:** the goal of sports associations to attract more talent ... (*teleological*)

- (149) *Verbände müssen doch den Wettbewerb fördern. Daher: Wenn es einen Verband für sportliches Treppensteigen gäbe, müsste dieser den Wettbewerb fördern.*  
 sports-associations must PRT the competition boost therefore if it a association for competitive stair-climbing existed would-have-to *dieser den Wettbewerb fördern.*  
 that the competition boost  
 ‘Sports associations have to boost the competition. Therefore, if an association for competitive stair climbing existed, it would have to boost the competition.’

**In view of:** the abilities of system administrators ... (*ability*)

- (150) *Systemadministratoren können ein Zertifikat generieren. Daher: Wenn Paul ein Systemadministrator wäre, könnte er ein Zertifikat generieren.*  
 system-administrators can a certificate generate therefore if Paul a system-administrator were would-be-able-to he a certificate *generieren.*  
 generate  
 ‘System-administrators can generate a certificate. Therefore, if Paul were a system-administrator, he would be able to generate a certificate.’

All of the supported counterfactuals above contain the same modal with the same interpretation as the generic sentences from which they are inferred. Additionally, for the individuals Peter, the fictional association, and Paul in examples (148)–(150), it has to be assumed (i) that they would fall under the relevantly non-exceptional individuals as required by the generic sentence, and (ii) that they would consequently share the same wishes, goals, and abilities of all other non-exceptional farmers, associations, and system-administrators, respectively.

Note that counterfactual entailments of the form in (145) are not unavailable in general. Entailments of this kind are observed for overt epistemic modals in generic sentences. Since epistemic modals show different scopal behavior (cf. Section 3.2, they can be interpreted as scoping over the generic operator (MOD > *Gen*). Hence, inferences to counterfactuals embedded under a modal expression are expected to be supported. This is borne out, as illustrated in (151).<sup>81</sup>

<sup>81</sup>A more detailed investigation of the interaction of *Gen* with epistemic modals is beyond the scope of this thesis and is left for further research. For examples like (151), the epistemic flavor may not be conceptually compatible with the *Gen* > MOD ordering. This order expresses a necessity for the individual members of a specific set of individuals based on the speaker’s knowledge. Hence, the vague, quasi-universal quantification over individuals induced by the generic operator may be incompatible with specific, individual knowledge on the speaker’s part. For examples of generic sentences with overt epistemic modals that are interpreted in the first ordering, see von Stechow and Iatridou (2003).

**Scenario:** It's Peter's first time at the zoo. Peter learns about lions, and that they don't eat plants, fruit, seeds, or nuts.

- (151) Peter: *Löwen müssen Fleischfresser sein!*  
           lions must carnivores be  
 Peter: 'Lions must be carnivores!'  
 ~ 'Given what I know it must be the case that lions are carnivores.'

In accordance with the schema in (145) above, the following statement may be inferred.

- (152) *Es ist also notwendigerweise der Fall, dass Chester ein Fleischfresser*  
 it is therefore necessarily the case that Chester a carnivore  
*wäre, wenn er ein Löwe wäre.*  
 would-be if he a lion were  
 'Therefore, it is necessarily the case that Chester would be a carnivore if he were a lion.'

In sum, the three observations above permit the conclusion that for non-epistemic modals, sentences of the form *Fs must/may be Gs* in German and English are only intuitively understood in the reading given by the ordering *Gen* > MOD. This result can be extended to the corresponding sentences with indefinite singular noun phrases and impersonally used pronouns. For instance, the two examples in (153) support the counterfactual statements in (154).

- (153) a. *Ich kann als Sysadmin ein Zertifikat generieren.*  
 I can as system-administrator a certificate generate  
 'A system-administrator can generate a certificate.'<sup>82</sup>  
 b. *Du musst als Künstler ja auch mit deinen Gefühlen haushalten.*  
 you must as artist PRT also with your emotions economize  
 'An artist has to be economical with his emotions.'<sup>83</sup>
- (154) a. *Wenn Peter ein Sysadmin wäre, könnte er (auch) ein*  
 if Peter a system-administrator would-be could he also a  
*Zertifikat generieren.*  
 certificate generate  
 'If Peter were a system administrator, he could generate a certificate.'  
 b. *Wenn Peter ein Künstler wäre, müsste er (auch) mit*  
 if Peter an artist would-be would-have-to he also with  
*seinen Gefühlen haushalten.*  
 his emotions economize  
 'If Peter were an artist, he would have to be economical with his emotions.'

Again, the assumptions that Peter would be a non-exceptional system administrator

<sup>82</sup>Shortened from <http://www.ntz1.org/604481-https-proxy>

<sup>83</sup><http://www.france-delon.de/buch4.htm>

or artist, and that the interpretation of the possibility and necessity modals is kept constant are prerequisites to infer the statements in (154).

To determine the reason for why the second scope ordering  $\text{MOD} > \text{Gen}$  seems to be unavailable for non-epistemic modals, further investigations are needed. Since the answer to this question is not necessary at the moment to proceed, this issue is left for further research.

### 3.5.2 Formalizing the two-operator account

Based on the results in the previous subsection, the outline of the two-operator account argued for in Section 3.4 can be made more precise. The refined formulation is given in (155).

- (155) **Two-operator account:** The variable contributed by an impersonally used pronoun is always bound by a covert generic operator. Hence, co-occurring overt modals never bind this variable. In addition, they are always interpreted in the scope of the generic operator.

For the German modal verbs *müssen* (Engl. ‘must’), *können* (Engl. ‘can’), and *dürfen* (Engl. ‘can/be allowed to’), I assume the meaning in (156) as discussed in Section 3.2.

- (156) a.  $\llbracket \textit{müssen} \rrbracket^{c,g,w} = \lambda p_{\langle s,t \rangle} . \forall w' \in O(\mathbf{f}, \mathbf{g}, w)[p(w')]$   
 b.  $\llbracket \textit{können/dürfen} \rrbracket^{c,g,w} = \lambda p_{\langle s,t \rangle} . \exists w' \in O(\mathbf{f}, \mathbf{g}, w)[p(w')]$

For the generic operator, *Gen*, I adopt Drewery’s (1998) proposal as fleshed out in Section 3.3. The truth-conditions for sentences of the form ‘*Fs are G*’ and ‘*an F is a G*’ are assumed to be captured by the formula in (157).

- (157)  $\forall w'[w \sim_{F,G} w' \rightarrow \forall x[F(x)(w') \ \& \ N_{F,G}(\langle x, w' \rangle)(w') \rightarrow G(x)(w')]]$

With respect to overt modals in generic sentences, I depart from Drewery’s proposal discussed in Section 3.3.3.<sup>84</sup> In accordance with the outline of the two-operator account in (155), I assume that for generic sentences containing an overt modal, the modal always contributes its standard denotation, which interacts with the semantic contribution of the generic operator.

The aim of this second part of Section 3.5 is to analyze the interaction between the semantic contribution of *Gen* and the overt modals found in the data. This investigation results in a formal account for the intensional sentential contexts of the impersonal uses of *ich*, *du*, and *man*.

<sup>84</sup>Drewery (1998) assumes that overt modals only have an effect on the interpretation of the generic operator *Gen*, but have no independent semantic contribution.

The first step of spelling out the two-operator account is to combine the meaning proposed for the modals in (156) and the generic operator in (157) as indicated by the two-operator account. This results in the truth-conditional content given in (158-a) and (158-b) for the combinations of the generic operator with a necessity and a possibility modal, respectively.

- (158) a.  $\llbracket F\text{s must be } G \rrbracket^{w,g,c} = 1$  iff  
 $\forall w'[w \sim_{F,\Box G} w' \rightarrow \forall x[F(x)(w') \& N_{F,\Box G}(\langle x, w' \rangle)(w') \rightarrow$   
 $\quad \forall w'' \in O(\mathbf{f}, \mathbf{g}, w')[G(x)(w'')]]]$
- b.  $\llbracket F\text{s may be } G \rrbracket^{w,g,c} = 1$  iff  
 $\forall w'[w \sim_{F,\Diamond G} w' \rightarrow \forall x[F(x)(w') \& N_{F,\Diamond G}(\langle x, w' \rangle)(w') \rightarrow$   
 $\quad \exists w'' \in O(\mathbf{f}, \mathbf{g}, w')[G(x)(w'')]]]$

Since the modal occurs in the scope of the generic operator, it is part of the matrix property of *Gen*. This means that it has an effect on the accessibility relation and the set of non-exceptional individuals associated with *Gen*, i.e. the sets  $N_{F,\Box G}$  and  $N_{F,\Diamond G}$  and the induced equivalence relations  $w \sim_{F,\Box G} w'$  and  $w \sim_{F,\Diamond G} w'$ . This captures the observation that the exceptions are not determined with respect to the “bare” matrix property  $G$ , but with respect to the modal property,  $\Box G$  or  $\Diamond G$  (cf. Section 3.5.1). The terms  $\Box G$  and  $\Diamond G$  are intended as abbreviations for the following complex expressions.

- (159) a.  $\Box G := \lambda w. \lambda x. \forall w' \in O(\mathbf{f}, \mathbf{g}, w)[G(x)(w')]$   
b.  $\Diamond G := \lambda w. \lambda x. \exists w' \in O(\mathbf{f}, \mathbf{g}, w)[G(x)(w')]$

In other words,  $\Box G$  and  $\Diamond G$  express the properties of necessarily and possibly being  $G$ , respectively. The abstraction over the world variable  $w$  and the individual variable  $x$  is needed since the generic operator, which binds these variables at the sentence level, is not considered when the set of non-exceptional individuals is determined.

The formalization in (158) presents a naive perspective on the interaction between the generic operator and overt modals. Since the modal is interpreted in the scope of the generic operator, its accessible worlds are determined relative to the set of accessible worlds of the generic operator. Specifically, for every generically accessible world  $w'$ , the interpretation of the modal depends only on  $w'$ . If the data is considered in greater detail, however, not only the interpretation of the generic operator, but also that of the modal intuitively depends on the world of evaluation  $w$ . Consider the example in (160).

- (160) *Bauern können ihre Kühe melken.*  
farmers may their cows milk  
‘Farmers may milk their cows.’

The sentence above is intuitively interpreted as a statement about farmers in general, in view of the German law *in the world of evaluation*  $w$ . In other words, (160) states a possibility for non-exceptional farmers that is granted by the German law in the world of evaluation. However according to (158), (160) is interpreted as follows: All non-exceptional farmers with respect to being allowed to milk their cows are permitted to milk their cows with respect to the German law *in the generically accessible worlds*. Since the German law in the generically accessible worlds could differ substantially from the German law in the world of evaluation, the intuitive interpretation of (160) is not captured.

The same intuition arises for the interpretation of other non-epistemically interpreted overt modals, e.g. the bouletic, teleological, and ability modals in (161)–(163).

**In view of:** the wishes of farmers in the world of evaluation ... (*bouletic*)

- (161) *Bauern müssen ihre Kühe melken.*  
farmers must their cows milk  
'Farmers must milk their cows.'

**In view of:** the goal of sports associations in the world of evaluation ... (*teleological*)

- (162) *Verbände müssen doch den Wettbewerb fördern.*  
sports-associations must PRT the competition boost  
'Sports associations have to boost the competition.'

**In view of:** the abilities of system administrators in the world of evaluation ... (*ability*)

- (163) *Systemadministratoren können ein Zertifikat generieren.*  
system-administrators can a certificate generate  
'System-administrators can generate a certificate.'

Therefore, the intuitive interpretation for sentences of the form '*Fs must be Gs*' and '*Fs may be Gs*' should be given as (164).

- (164) a.  $\llbracket Fs \text{ must be } G \rrbracket^{w,g,c} = 1$  iff  
 $\forall w' [w \sim_{F,\Box G} w' \rightarrow \forall x [F(x)(w') \& N_{F,\Box G}(\langle x, w' \rangle)(w') \rightarrow$   
 $\quad \forall w'' \in O(\mathbf{f}, \mathbf{g}, \mathbf{w}) [G(x)(w'')]]]$   
b.  $\llbracket Fs \text{ may be } G \rrbracket^{w,g,c} = 1$  iff  
 $\forall w' [w \sim_{F,\Diamond G} w' \rightarrow \forall x [F(x)(w') \& N_{F,\Diamond G}(\langle x, w' \rangle)(w') \rightarrow$   
 $\quad \exists w'' \in O(\mathbf{f}, \mathbf{g}, \mathbf{w}) [G(x)(w'')]]]$

Instead of stipulating that the modal is interpreted relative to the world of evaluation as done in (164), it would be preferable if the connection to the world of evaluation could be derived from the given parts. To see whether this is possible, the predictions

made by Drewery's account for generically accessible worlds need to be examined more closely, and need to be checked against the requirements for the interpretation of the modal.

Drewery (1998) assumes that the generically accessible worlds are induced by a function  $N_{F,G}$  that assigns each world the set of non-exceptional individuals in this world with respect to a specific body of law in force at that world. The definition is repeated in (165).

(165) A pair  $\langle x, w' \rangle$  is in  $N_{F,G}(w)$  iff  $x$  is a non-exceptional  $F$  with respect to  $G$  from the point of view of the world  $w$ , but with respect to its properties in  $w'$ .

It follows from (165) that an individual  $x$  counts as an exception in  $w'$  with respect to the point of view of  $w$  iff  $\langle x, w' \rangle \notin N_{F,G}(w)$ . Given Drewery's assumptions on exceptional individuals, this means that the body of rules under consideration contains another rule that overrides the rule expressed by the generic sentence for the individual  $x$ .

For all non-exceptional individuals, being in  $N_{F,G}(w)$  expresses that they do not have a property that is part of any specialized rule in any of the accessible worlds. From this observation, and the definition of the class of accessible worlds as those worlds that agree on the non-exceptionality property  $N_{F,G}(w)$ , Drewery (1998) concludes that the accessible worlds share the same body of rules that is used to determine the function  $N_{F,G}$ . However, this conclusion can be read in either of the following two ways:<sup>85</sup>

- The accessible worlds agree on the content of the body of rules that is used to determine the function  $N_{F,G}$ .
- The body of rules in force at each accessible world could in principle differ from all other bodies of rules regarding their content, but could be indistinguishable with respect to  $N_{F,G}$ .

I argue that Drewery's definition only ensures the latter view. Recall that the individuals  $x$  that are exceptional in a world  $w'$  trigger a specialized rule for all of the accessible worlds. However, the exact content of these rules may differ for each of the accessible worlds. This is shown with respect to the following toy model.

(166) Assume,  $W = \{w_1, w_2\}$  and  $D_{w_1} = D_{w_2} = \{a, b, c, d\}$  such that

- a.  $w_1$ :  $\text{cat}_{w_1} = \{a, b, c, d\}$ ;  $\text{black}_{w_1} = \{a, b\}$ ;  $\text{blind}_{w_1} = \{b, c\}$ ;  
 $\text{no-teeth}_{w_1} = \{a, c\}$ ;  $\text{likes-mice}_{w_1} = \{d\}$

Specialized rules in  $w_1$  about cats:

Black cats do not like mice.

Blind cats do not like mice.

<sup>85</sup>I thank Magdalena Kaufmann (p.c.) for pointing this out to me.

- b.  $w_2$ :  $\text{cat}_{w_2} = \{a, b, c, d\}$ ;  $\text{black}_{w_2} = \{a\}$ ;  $\text{blind}_{w_2} = \{a\}$ ;  
 $\text{no-teeth}_{w_2} = \{a\}$ ;  $\text{likes-mice}_{w_2} = \{b, c, d\}$

Specialized rules in  $w_2$  about cats:

Blind, black cats do not like mice.

Cats without teeth do not like mice.

In Drewery's system, to evaluate the truth of *Cats like mice* in  $w_1$  with respect to the model in (166), first the properties  $N_{\text{cat, likes-mice}}(w_1)$  and  $N_{\text{cat, likes-mice}}(w_2)$  need to be determined. These are as in (167).

- (167) a.  $N_{\text{cat, likes-mice}}(w_1) = \{\langle d, w_1 \rangle, \langle b, w_2 \rangle, \langle c, w_2 \rangle, \langle d, w_2 \rangle\}$   
 b.  $N_{\text{cat, likes-mice}}(w_2) = \{\langle d, w_1 \rangle, \langle b, w_2 \rangle, \langle c, w_2 \rangle, \langle d, w_2 \rangle\}$

In  $w_1$  the intersection of 'blind cat' and 'black cat' is the set  $\{a, b, c\}$ . This is also the intersection of 'blind and black cat' and 'cat without teeth' in  $w_1$ . Similarly for  $w_2$ , the intersection of 'blind cat' and 'black cat', as well as for 'blind and black cat' and 'cat without teeth' is  $\{a\}$ . Therefore, the set of generically accessible worlds are  $w_1$  and  $w_2$  which agree on the set of exceptional individuals, but which do not agree on the specific content of the body of rules used to determine this set.

Given this result, one can now determine whether the parts that are combined to build up the proposal in (158) ensure that the set of accessible worlds for the modal depends on the world of evaluation.

First, the details regarding how a modal can depend on the world of evaluation needs to be determined. The specific interpretation of a modal is relative to the two parameters  $f$  and  $g$  which fix the modal base and the ordering source, respectively. As determined in Section 3.4, all modal flavors that are found with overt modals in the data are non-epistemic. For all non-epistemic modals, the modal base  $f$  is circumstantial, i.e. the values of  $f(w')$  for an arbitrary world  $w'$  depends on the relevant circumstances in that world. The ordering source  $g$  reflects the specific flavor of the modal, and contributes the criteria which determine what counts as ideal in a given world.

For the interpretation of the relevant non-epistemic modals, the intuition regarding their dependence on the world of evaluation can be made precise as follows. The worlds picked by the modal base,  $f$ , need to vary across accessible worlds, since  $f$  is sensitive to the specific facts that determine which individuals count as non-exceptional individuals in a given accessible world. In contrast, the set of propositions picked by the ordering source,  $g$ , should stay constant across all generically accessible worlds. This captures that the body of law should be the same for all accessible worlds. So in sum, the dependence on the world of evaluation is only required for the value of the ordering source,  $g$ .

Consider again example (160). This sentence expresses that in all accessible possible worlds, all non-exceptional farmers regarding the possibility to milk their cows may milk their cows. That is, the non-exceptional farmers are considered relative to their own circumstances in the accessible worlds, but the possibility is evaluated given the law in the world of evaluation.

Formally, the deontic interpretation of the possibility modal *können* in (160) is determined on the basis of a circumstantial modal base which reflects the circumstances in the worlds of the non-exceptional individuals, and an ordering source which contains the relevant laws regarding farmers of the world of evaluation.

How does the set of propositions assigned by the ordering source  $g$  to each generically accessible world relate to the relevant body of law that is shared by all accessible worlds in Drewery's (1998) account? To answer this question, it needs to be investigated how  $N_{F,\Box G}$  and  $N_{F,\Diamond G}$  are determined, i.e. which individuals count as exceptions for modal properties  $\Box G$  or  $\Diamond G$ .

In general, non-exceptional  $F$ -individuals regarding  $\Box G$  or  $\Diamond G$  are those for which no specialized rule exists. For deontic modals regarding a body of law, it was discussed in Section 3.5.1 that the set of exceptional individuals are those that are explicitly excluded by the law. Therefore, all generically accessible worlds need to have specialized rules in the relevant body of law which exclude the same exceptional  $F$ s. The same is true for morally deontic modal interpretations. For the behavior of other non-epistemic interpretations found in the data, consider the three examples for bouletic, teleological, and ability readings in (161)–(163). For the bouletic, teleological, and ability flavors, the set of underlying rules is not part of an official code of law as in the case of the German law on farmers. However, all three flavors depend on interconnected sets of rules which need to be in force in the world of evaluation:

- (161): The exceptional farmers regarding the necessity to milk their cows (in view of a specific set of wishes which they share) are those for which the wishes are realized even if they do not milk their cows.
- (162): The exceptional sports associations regarding the necessity to boost the competition (in view of a specific set of goals which they share) are those that reach their goals even if they do not boost the competition.
- (163): The exceptional system administrators regarding the possibility to generate a certificate (in view of a specific set of abilities which they share) are those for which their ability does not suffice to generate a certificate because of additional (possibly external) factors.

Hence, it seems to be the case that the set of rules used to determine  $N_{F,\Box G}$  and  $N_{F,\Diamond G}$  is also used to fix the value of the ordering source for the interpretations of the co-occurring modals.

Even if the discussion above is on the right track, one problem remains: it cannot be formally ensured that  $\mathbf{g}$  assigns the same set of propositions to all generically accessible worlds. As shown in (166), while the bodies of rules for all accessible worlds ultimately agree on which individuals count as exceptional, the different bodies of rules do not have to agree on the exact content. Therefore, it cannot be ensured that the correspondence in (168) holds, which is needed to capture the intuitive dependence stated in (164).

$$(168) \quad \text{For any } F, G, w \text{ and ideal-based } \mathbf{g}: \\ \forall w' [w' \sim_{F, \text{MOD}} G w \rightarrow \mathbf{g}(w') = \mathbf{g}(w)] \\ \text{for MOD} \in \{\Box, \Diamond\}$$

In addition, it is unclear whether the body of rules that is used to determine the accessible worlds for *Gen* is identical with, or only a subset of the set of propositions that is used to determine the ordering source  $\mathbf{g}$ . The vagueness involved in determining the sets  $N_{F, \Box G}$  and  $N_{F, \Diamond G}$  and the context dependence of the ordering source  $\mathbf{g}$  put a definitive answer to this question out of reach. Hence, a formal way is needed to ensure the desired interpretation for the ordering source of a modal in the scope of a generic operator.

The meaning postulates in (169) again spell out (168) for the two different modal forces. They stipulate that the value assigned by  $\mathbf{g}$  does not vary inside the equivalence class determined by  $w \sim_{F, \text{MOD}} G w'$ .<sup>86</sup>

$$(169) \quad \text{a. } \forall w' [w \sim_{F, \Box G} w' \rightarrow \mathbf{g}(w) = \mathbf{g}(w')] \\ \text{b. } \forall w' [w \sim_{F, \Diamond G} w' \rightarrow \mathbf{g}(w) = \mathbf{g}(w')]$$

Hence, the value of the free variable  $\mathbf{g}$  depends on the specific value attributed to the relevant modal property in the world of evaluation.

For the modal base  $\mathbf{f}$ , no meaning postulates need to be formulated. As discussed above, the modal base has to depend on the different accessible worlds. One reason for this is that for a given individual, being exceptional or non-exceptional is not a constant property. That is, for any two worlds  $w_i$  and  $w_j$  such that  $w_i \neq w_j$ , if  $\langle x, w_i \rangle \in N_{F, G}(w)$ , it is not necessarily the case that  $\langle x, w_j \rangle \in N_{F, G}(w)$ .

To summarize this section, the final result regarding the formalization of the refined two-operator account is given in (170).

$$(170) \quad \text{a. } \llbracket F\text{s must be } G \rrbracket^{w, \mathbf{g}, c} = 1 \text{ iff} \\ \forall w' [w \sim_{F, \Box G} w' \rightarrow \forall x [F(x)(w') \ \& \ N_{F, \Box G}(\langle x, w' \rangle)(w') \rightarrow \\ \forall w'' \in O(\mathbf{f}, \mathbf{g}, w') [G(x)(w'')]]] \\ \text{provided: } \forall w' [w \sim_{F, \Box G} w' \rightarrow \mathbf{g}(w) = \mathbf{g}(w')]$$

<sup>86</sup>These meaning postulates could be interpreted as felicity conditions on the possible values that may be assigned contextually to  $\mathbf{g}$  if the modal is embedded under a generic operator. I thank Magdalena Kaufmann (p.c.) for suggesting this view on these postulates to me.

- b.  $\llbracket F \text{ s may be } G \rrbracket^{w,g,c} = 1$  iff  
 $\forall w'[w \sim_{F,\diamond G} w' \rightarrow \forall x[F(x)(w') \ \& \ N_{F,\diamond G}(\langle x, w' \rangle)(w') \rightarrow$   
 $\exists w'' \in O(f, g, w')[G(x)(w'')]]$   
 provided:  $\forall w'[w \sim_{F,\diamond G} w' \rightarrow g(w) = g(w')]$

## 3.6 Summary

Chapter 3 addressed the two modality-related issues that were identified for the unified account proposed in Section 2.5.3.

The first issue concerning the predictions made by the account for *Gen* proposed in Krifka et al. (1995) was addressed in Section 3.3. I introduced the two alternative modal accounts proposed in Drewery (1998) and Greenberg (2007), and discussed their positive, as well as their undesirable predictions. At the end of this section, I adopted an adapted version of the account proposed in Drewery (1998).

The second issue concerning possible binders for the free variables contributed by impersonally used *ich*, *du*, and *man* was addressed in Section 3.4. I argued that the non-epistemic modals frequently found in the data cannot bind variables contributed by impersonal uses. Consequently, I suggested that a two-operator account for sentences containing overt modals is needed. This two-operator account was further refined, and spelled out in Section 3.5. In this section, the modal flavors found in the data and the relative scope order of the generic operator and the overt modals were discussed in detail. It was determined that non-epistemic modals are always interpreted in the scope of *Gen*. Based on these results, the two-operator account was refined to the form in (171).

- (171) **Two-operator account:** The variable contributed by an impersonally used pronoun is always bound by a covert generic operator. Hence, co-occurring overt modals never bind this variable. In addition, they are always interpreted in the scope of the generic operator.

The straightforward combination of the account for *Gen* in Drewery (1998) and the meaning proposed for modals in Kratzer (1977, 1981a, 1991) (cf. Section 3.2) was discussed in Section 3.5.2. There, an additional meaning postulate was formulated that is needed to capture the intuitive dependence of the lower scoping modal on the world of evaluation.

Given the assumption made at the beginning of this chapter that impersonally interpreted *ich*, *du*, and *man* only contribute a free variable, the proposals for the truth-conditions of (172-a) and (173-a) come out as in (172-b) and (173-b), respectively.<sup>87</sup>

<sup>87</sup>The domain of the universal quantifier over individuals in (172-b) and (173-b) is made explicit by the *als*-phrases (cf. Appendix A1).

- (172) a. *Ich melke als Bauer doch meine Kühe.*  
 I milk as farmer PRT my cows  
 ‘A farmer milks his cows.’
- b.  $\llbracket(172\text{-a})\rrbracket^{c,w,g} =$   
 $\forall w'[w \sim_{\text{farmer, milk-cows}} w' \rightarrow \forall x[\text{farmer}(x)(w') \ \& \ N_{\text{farmer, milk-cows}}(w')(\langle x, w' \rangle) \rightarrow$   
 $\text{milk-cows}(x)(w')]]$
- (173) a. *Ich muss als Bauer meine Kühe melken.*  
 I must as farmer my cows milk  
 ‘A farmer must milk his cows.’
- b.  $\llbracket(173\text{-a})\rrbracket^{c,w,g} =$   
 $\forall w'[w \sim_{\text{farmer, } \square \text{milk-cows}} w' \rightarrow$   
 $\forall x[\text{farmer}(x)(w') \ \& \ N_{\text{farmer, } \square \text{milk-cows}}(w')(\langle x, w' \rangle) \rightarrow$   
 $\forall w'' \in O(\mathbf{f}, \mathbf{g}, w')[\text{milk-cows}(x)(w'')]]]$   
 and  $\forall w'[w \sim_{\text{farmer, } \square \text{milk-cows}} w' \rightarrow \mathbf{g}(w') = \mathbf{g}(w)]$  (postulate)

The predictions that are made by the full account that combines the results from Chapters 2 and 3 are discussed in Chapter 4.

Note that the formalization of the two-operator account in Section 3.5 only takes into account one of the varied types of intensional contexts in which the impersonal uses of *ich*, *du*, and *man* occur. The conditional declaratives, conditional imperatives, and interrogatives that are also found in the data (cf. Section 1.2) have not been addressed, yet. A detailed analysis of these types of intensional sentential contexts, however, falls outside the scope of this thesis. In Appendix A3, I propose and briefly discuss an extension of the two-operator account for conditional sentences.



# Chapter 4

## Accounting for the pragmatic effects of *ich* and *du*

### 4.1 Introduction

Chapters 2 and 3 so far focused on the semantics of impersonally used personal pronouns: In Chapter 2, I proposed a semantic account for first and second person singular pronouns that aimed to capture both the referential and the impersonal uses of these pronouns. Based on a formal proposal in Elbourne (2008) for Nunberg's (1993) three-component analysis of indexicals, I argued that first and second person singular pronouns are Heimian indefinites with underspecified, context-dependent descriptive content. In Chapter 3, I addressed two issues regarding the intensional sentential contexts in which the impersonal uses of personal pronouns occur. Based on investigations regarding the combination of the generic operator with overt modals, I proposed a formal account for these contexts.

The first point that I briefly address in this chapter is an evaluation of the combined results of Chapters 2 and 3. In Section 4.2, I investigate the interaction between the proposal for the meaning of personal pronouns from Chapter 2 with the modal analysis of the intensional sentential context from Chapter 3. I discuss the problems that still remain for the combined account, and conclude that the account for first and second person singular pronouns proposed in Section 2.5.3 is simply not tenable. As a result—this was already anticipated in Section 2.6—I drop the search for a single, underspecified account for all uses of first and second person pronouns, and focus exclusively on the pragmatic aspects of the impersonal uses (cf. Section 1.4).

The main aim of this chapter is to propose a novel account for the impersonal readings of *ich*, *du*, and *man*. For this, I conduct an in-depth investigation of the pragmatic effects. This investigation is based on observations on the pragmatic effects of English impersonal *one* (cf. Moltmann 2006, 2010a,b) and German *man* (cf. Zifonun 2000).

These observations, Moltmann’s formal account for English *one*, and its problems are reviewed and discussed in Section 4.3.

In contrast to Moltmann (2006, 2010a,b), I argue that the pragmatic effects are the result of independent meaning components which contribute additional information about (i) the belief state of the speaker and (ii) the interaction between the speaker and other discourse participants. This view is spelled out in Section 4.5. The traditional view on content that is communicated “in addition” to the primary truth-conditional content, as well as recent work on the difference between “at-issue” and “not-at-issue” content is introduced in Section 4.4 (cf. Grice 1975; Potts 2005; Stalnaker 1972, 1973, 1974; Simons et al. 2011).

Since the account proposed in Section 4.5 aims to capture only the impersonal uses of first and second person singular pronouns, one might wonder whether a principled connection between the impersonal use and the referential use can obtain at all (cf. Section 2.3.1). In Section 4.6, I discuss possible links between the contribution of impersonally interpreted personal pronouns and a directly referential semantics for the referential use.

## 4.2 A combination of the results of Chapters 2 & 3 and its problems

### 4.2.1 Combining the results of Chapters 2 & 3

The aim of this section as a whole is to combine the results regarding the semantic contribution of first and second person singular pronouns from Section 2.5.3 with the two-operator account of the intensional sentential contexts of the impersonal uses worked out in Section 3.5.2. For the resulting proposal, I then discuss the predictions and remaining problems based on the list of problems identified in Section 2.6.

To anticipate the result of this section: unsurprisingly, the main problems for the proposal presented in Section 2.5.3 did not miraculously disappear since an improved analysis of the intensional sentential context has no influence on the pronominal meaning. Hence at the end of this section, the conclusion to discard the proposal made in Section 2.6 is still valid.

Let us nevertheless examine the full proposal in detail. In Section 2.5.3, the common core of the meaning of first and second person pronouns was proposed to be as in (1).

$$(1) \quad \lambda w.R(i)(x)(w)$$

$x$  ... free variable contributed by the pronoun

$i$  ... individual selected from the utterance context

$R$  ... contextually determined relation between the values of  $x$  and  $i$

This meaning is derived from the complex syntactic structure in (2) that underlies all uses of first and second person singular pronouns.<sup>1</sup>

$$(2) \quad [ x [ R_2 i_1 ] ]$$

The difference between first and second person pronouns is modelled by assigning different values to the free variable  $i_1$ : the possible values are restricted by the morphosyntactic person features, [1st] and [2nd], associated with these pronouns (cf. Kratzer 2009). For first person singular pronouns, the variable assignment  $g$  assigns the speaker of the utterance,  $c_S$ , to  $i_1$ . For second person singular pronouns, the value of  $i$  is the addressee in the utterance context,  $c_A$ . The presuppositional morphosyntactic features of personal pronouns, e.g. number features (cf. Heim and Kratzer 1998; Kratzer 2009), are assumed to contribute presuppositions on the values for the individual variable  $x$ . For instance, in the case of first person singular *ich* and second person singular *du*, the requirement that the values of  $x$  be atomic is contributed by the  $\phi$ -feature [singular]. The refined truth-conditional contribution for *ich* and *du* is given in (3).

$$(3) \quad \begin{array}{ll} \text{a.} & \llbracket ich \rrbracket^{g,w,c} = \lambda w.R(i)(x)(w), \text{ defined iff } x \text{ is atomic} & (i = g(i_1) = c_S) \\ \text{b.} & \llbracket du \rrbracket^{g,w,c} = \lambda w.R(i)(x)(w), \text{ defined iff } x \text{ is atomic} & (i = g(i_1) = c_A) \end{array}$$

The referential and impersonal readings of the pronouns differ in two respects: (i) the value of the free relation variable  $R$ , and (ii) the operator that binds the free individual variable  $x$ .

In the referential use, the variable assignment  $g$  assigns the identity relation for individuals to  $R$ .<sup>2</sup> This ensures that the only individual that satisfies the descriptive content is the individual picked from the context. The variable  $x$  is bound by an existential quantifier introduced via existential closure. The propositions denoted by episodic sentences that contain referentially used *ich* and *du* are schematically given in (4).

$$(4) \quad \begin{array}{ll} \text{a.} & \lambda w.\exists x[x = c_S \text{ in } w \ \& \ P(x)(w)] & (ich) \\ \text{b.} & \lambda w.\exists x[x = c_A \text{ in } w \ \& \ P(x)(w)] & (du) \end{array}$$

For the impersonal use, in contrast, the value of  $R$  is used to model the pragmatic effects observed with the impersonal reading. Formally, a primitive “identifies-with”-relation is introduced that relates the speaker or the addressee to those individuals with whom they empathize. Furthermore, the free variable  $x$  in the impersonal use is bound by the generic operator  $Gen$ , see (5).

<sup>1</sup>As in Chapter 2, I use  $R$  and  $i$  to talk about the variables  $R_2$  and  $i_1$  and their respective assigned values,  $g(2)$  and  $g(1)$ .

<sup>2</sup>The deferred ostension readings for first and second person singular pronouns discussed in Nunberg (1993) are left aside in this discussion.

- (5) a.  $\text{Gen } [x; ](\text{identifies-with}(c_S)(x) \ \& \ \phi; \psi)$  (*ich*)  
 b.  $\text{Gen } [x; ](\text{identifies-with}(c_A)(x) \ \& \ \phi; \psi)$  (*du*)

In Chapter 3, I introduced and discussed the modal proposals for the generic operator put forth in Krifka et al. (1995), Drewery (1998), and Greenberg (2007). It was shown that the observation made for impersonally used personal pronouns in Section 2.6, i.e. only those individuals that the generalization is about have to conform to a certain set of ideals, holds for generic sentences in general. Based on a comparison of the three accounts, I adopted a modified version of Drewery's (1998) account.

Drewery argues that only those worlds should be considered in which the non-exceptional individuals denoted by the material in the restrictor of *Gen* act according to the regularity expressed in the sentence. This is done by introducing a non-exceptionality function,  $N$ , which depends on the restrictor and the scope of *Gen*, and which is used to induce *Gen*'s accessibility relation, see (6) and (7).

- (6) a. A pair  $\langle x, w' \rangle$  is in  $N_{F,G}(w)$  iff  $x$  is a non-exceptional  $F$  with respect to  $G$  from the point of view of the world of evaluation  $w$ , but with respect to its properties in  $w'$ .  
 b.  $w_1 \sim_{F,G} w_2$  iff  $N_{F,G}(w_1) = N_{F,G}(w_2)$

The truth-conditions proposed for generic sentences of the form '*Fs are Gs*' and '*an F is a G*' are given in (7).

- (7)  $\llbracket F\text{s are } G \rrbracket^{w,g,c} = 1$  iff  
 $\forall w' [w \sim_{F,G} w' \rightarrow \forall x [F(x)(w') \ \& \ N_{F,G}(w')(\langle x, w' \rangle) \rightarrow G(x)(w')]]$

Furthermore, it was determined that no co-occurring non-epistemic modal can act as binder for variables contributed by impersonally used pronouns. And furthermore, that the co-occurring modals are always interpreted in the scope of the generic operator *Gen*. An investigation of the interaction between *Gen* and overt modals in its scope revealed in addition that modals embedded under *Gen* intuitively depend on the world of evaluation  $w$  rather than the generically accessible worlds.

For German modal verbs, a formal analysis based on the definition in Kratzer (1977, 1981a, 1991) was adopted, see (8).

- (8) a.  $\llbracket \text{müssen} \rrbracket^{c,g,w} = \lambda p_{\langle s,t \rangle} . \forall w' \in O(\mathbf{f}, \mathbf{g}, w) [p(w')]$   
 b.  $\llbracket \text{können/dürfen} \rrbracket^{c,g,w} = \lambda p_{\langle s,t \rangle} . \exists w' \in O(\mathbf{f}, \mathbf{g}, w) [p(w')]$

The formalization in (9) illustrates the resulting proposal for the truth-conditional content of generic sentences containing an overt modal element.

- (9) a.  $\llbracket F\text{s must be } G \rrbracket^{w,g,c} = 1$  iff  
 $\forall w'[w \sim_{F,\square G} w' \rightarrow \forall x[F(x)(w') \ \& \ N_{F,\square G}(w')(\langle x, w' \rangle) \rightarrow$   
 $\quad \forall w'' \in O(\mathbf{f}, \mathbf{g}, w')[G(x)(w'')]]]$
- b.  $\llbracket F\text{s may be } G \rrbracket^{w,g,c} = 1$  iff  
 $\forall w'[w \sim_{F,\diamond G} w' \rightarrow \forall x[F(x)(w') \ \& \ N_{F,\diamond G}(w')(\langle x, w' \rangle) \rightarrow$   
 $\quad \exists w'' \in O(\mathbf{f}, \mathbf{g}, w')[G(x)(w'')]]]$

The abbreviations  $\square G$  and  $\diamond G$  were introduced for the following complex expressions.

- (10) a.  $\square G := \lambda w. \lambda x. \forall w' \in O(\mathbf{f}, \mathbf{g}, w)[G(x)(w')]$   
 b.  $\diamond G := \lambda w. \lambda x. \exists w' \in O(\mathbf{f}, \mathbf{g}, w)[G(x)(w')]$

To capture the intuition that non-epistemic modals under *Gen* also depend on the world of evaluation, the value of the respective ordering source  $\mathbf{g}$  was fixed for all generically accessible worlds to the value assigned to the world of evaluation  $w$ . This was done with the following meaning postulates.<sup>3</sup>

- (11) For any  $F$ ,  $G$ ,  $w$  and ideal-based  $\mathbf{g}$ :
- a.  $\forall w'[w \sim_{F,\square G} w' \rightarrow \mathbf{g}(w) = \mathbf{g}(w')]$   
 b.  $\forall w'[w \sim_{F,\diamond G} w' \rightarrow \mathbf{g}(w) = \mathbf{g}(w')]$

By combining the two proposals for the intensional sentential context and the first and second person singular pronouns, the truth-conditions for e.g. the sentences in (12-a) and (13-a) come out as in (12-b) and (13-b).<sup>4</sup>

- (12) a. *Ich muss als Bauer meine Kühe melken.*  
 I must as farmer my cows milk  
 ‘A farmer must milk his cows.’
- b.  $\llbracket (12\text{-a}) \rrbracket^{c,w,g} =$   
 $\forall w'[w \sim_{\text{farmer} \ \& \ R(c_S), \ \square_{\text{milk-cows}}} w' \rightarrow$   
 $\quad \forall x[\text{farmer}(x)(w') \ \& \ R(c_S)(x)(w') \ \& \ N_{\text{farmer} \ \& \ R(c_S), \ \square_{\text{milk-cows}}}(w')(\langle x, w' \rangle) \rightarrow$   
 $\quad \forall w'' \in O(\mathbf{f}, \mathbf{g}, w')[\text{milk-cows}(x)(w'')]]]$

The formula in (12-b) can be spelled out as: ‘All worlds that agree with the world of evaluation on the set of non-exceptional-farmers-that-the-speaker-identifies-with regarding necessarily-milking-their-cows are such that all non-exceptional individuals of this kind in these worlds have the obligation to milk their cows.’

- (13) a. *Du musst als Bauer deine Kühe melken.*  
 you must as farmer your cows milk

<sup>3</sup>It was shown in Section 3.5.2 that the dependence of the ordering source  $\mathbf{g}$  of the embedded modal on the world of evaluation does not fall out automatically from the semantics of *Gen* and the modals.

<sup>4</sup>For reasons of readability, “*R*” is not substituted by “identifies-with” in the formulas in (12-b) and (13-b).

‘A farmer must milk his cows.’

- b.  $\llbracket (13\text{-a}) \rrbracket^{c,w,g} =$   
 $\forall w' [w \sim_{\text{farmer} \& R(c_A), \square_{\text{milk-cows}}} w' \rightarrow$   
 $\forall x [\text{farmer}(x)(w') \& R(c_A)(x)(w') \& N_{\text{farmer} \& R(c_A), \square_{\text{milk-cows}}}(w')(\langle x, w' \rangle) \rightarrow$   
 $\forall w'' \in O(f, g, w') [\text{milk-cows}(x)(w'')]]]$

In analogy to (12-b), (13-b) can be paraphrased as: ‘All worlds that agree with the world of evaluation on the set of non-exceptional-farmers-that-the-addressee-identifies-with regarding necessarily-milking-the-cows are such that all non-exceptional individuals of this kind in these worlds have the obligation to milk their cows.’

### 4.2.2 The problems of the combined account

I now turn to the problems and issues that arise for the combined account introduced above. This discussion is based on the observations made in Section 2.6, and in principle provides a formally more precise restatement of the central issues identified in that section. As stated in the previous subsection, the conclusion will be that the combined account does not resolve any of the issues regarding the descriptive content. Of course, this is to be expected since the intensional sentential context does not have any influence on the contribution of the personal pronouns. However—perhaps surprisingly—in the combined proposal, the interaction of the descriptive content contributed by the pronouns and the proposal for the intensional sentential context creates additional problems.

It was already noted in Section 2.6 that the central flaw of the account is the descriptive content that is contributed to the truth-conditions of a sentence by both of the pronouns’ uses. This flaw is inherited by the combined account.

For the impersonal use, the descriptive content is intended to capture the core of the pragmatic effects that are observed for *ich* and *du*. The intuitive connection between the impersonal uses and the speaker/the addressee is modelled by assigning the “identifies-with”-relation to the variable  $R$ . This descriptive content is then interpreted in the restrictor of the generic operator along with e.g. the predication expressed by co-occurring *als*-phrases. This means that the descriptive content is seen as a restricting property on the set of individuals for which the generalization is stated. This is illustrated in (12) and (13). In both examples the set of non-exceptional individual-world pairs and the accessibility relation depend on the descriptive content *identifies-with*( $i$ ), i.e. the property of being identified with by  $i$ . Consider the properties taken as arguments by  $N$  in (14).

- (14) a.  $N_{\text{farmer} \& \text{identifies-with}(c_S), \square_{\text{milk-cows}}}$   
 b.  $N_{\text{farmer} \& \text{identifies-with}(c_A), \square_{\text{milk-cows}}}$

That the speaker's or addressee's identifying attitude should have an effect on the generic statement is in conflict with three observations regarding the meaning of impersonally used *ich* and *du* and of the sentences containing them.<sup>5</sup>

The first issue concerns the meaning of impersonally used *ich* and *du* proper. It was observed that the two pronouns can be substituted for each other *salva veritate*. This means that in the impersonal uses, they are truth-conditionally equivalent (cf. Sections 1.2 and 2.3). In case the descriptive content contributed by *ich* and *du* is interpreted in the restrictor of *Gen*, two sentences that are identical modulo impersonally used *ich* vs. impersonally used *du*, e.g. (12-a) and (13-a), are predicted to express two different generalizations. Consider the descriptive content given in (15).

- (15) a. identifies-with( $c_S$ )( $x$ )( $w$ )  
 b. identifies-with( $c_A$ )( $x$ )( $w$ )

Put formally, the problem is that it cannot be ensured that for all contexts  $c$ ,

$$(16) \quad \forall w \forall x [\text{identifies-with}(c_S)(x)(w) = \text{identifies-with}(c_A)(x)(w)]$$

and consequently that

$$(17) \quad N_{\text{farmer} \ \& \ R(c_S), \ \square_{\text{milk-cows}}} = N_{\text{farmer} \ \& \ R(c_A), \ \square_{\text{milk-cows}}}$$

These equalities have to hold for the contributions of impersonally used *ich* and *du*, as well as the truth-conditional content of the sentences containing them to be equivalent.

The second issue concerns the generalizations expressed by sentences containing impersonal uses of personal pronouns. It was argued that these sentences denote the same propositions as corresponding ordinary generic sentences (cf. Section 1.2). That is, the sentences in (12-a) and (13-a) intuitively express the same regularity regarding farmers as the sentences in (18).

- (18) a. *Ein Bauer muss seine Kühe melken.*  
 a farmer must his cows milk  
 'A farmer has to milk his cows.'  
 b. *Bauern müssen ihre Kühe melken.*  
 farmers must their cows milk  
 'Farmers have to milk their cows.'

The interpretation of the descriptive content in the restrictor of *Gen* predicts, though, that (12-a) and (13-a), on the one hand, and (18), on the other hand, express different regularities. Compare the arguments of  $N$  in (14) to the properties taken by  $N$  in (19) for the sentences in (18).<sup>6</sup>

<sup>5</sup>The following discussion elaborates on the first two issues discussed in Section 2.6.

<sup>6</sup>It is assumed as a simplification that bare plural generics and indefinite singular generics share the same specific values for  $N$  and  $\sim$ . Whether Greenberg's (2007) insights regarding the difference

(19)  $N_{\text{farmer}, \square_{\text{milk-cows}}}$

For the sentences in (12-a) and (13-a), it is predicted that they express generalizations for certain subsets of farmers while the sentences in (18) express generalizations for farmers in general. Since the generic operator is not downward entailing—as Drewery convincingly shows (cf. Section 3.3.3), one cannot even assume that (12-a) and (13-a) are entailed by the sentences in (18). From the truth of sentences of the form ‘*Fs are Gs*’, it simply cannot be inferred that for some arbitrary property *H*, ‘*Fs that are Hs are Gs*’ is true. Hence, sentences of the form ‘*Fs are G*’ and ‘*Fs that are Hs are not G*’ may express consistent statements. This means that (20) is predicted to be coherent, contrary to fact.<sup>7</sup>

(20) *Ich muss als Bauer meine Kühe melken. #Aber Bauern müssen das nicht.*  
 I must as farmer my cows milk but farmers must that not  
 ‘As a farmer, one has to milk one’s cows. #But farmers don’t.’

Furthermore, it is predicted that the supported counterfactual inferences of sentences containing impersonally used personal pronouns should contain the descriptive content. This means that for the sentences in (12-a) and (13-a), the following counterfactuals should be inferable.<sup>8</sup>

(21) a. *Wenn Peter ein Bauer wäre mit dem ich mich identifiziere, dann müsste er seine Kühe melken.*  
 if Peter a farmer were with who I me identify then  
 must.KONJ he his cows milk  
 ‘If Peter were a farmer and I were to identify with him, then he would have to milk his cows.’

between indefinite singular generics and bare plural generics can be integrated in Drewery’s account has not been discussed in Chapter 3, and is still an open question which is left for further research.

<sup>7</sup>Note that the specific order of the sentences does not play a role for this argument, but has an effect on the availability of the intended impersonal interpretation of *ich*. Since in the reverse order in (i), the subject of the second sentence has to carry contrastive stress, the personal pronoun *ich* is necessarily interpreted referentially (cf. Chapter 1).

(i) *Bauern müssen ihre Kühe melken. Aber ich muss das (#als Bauer) nicht.*  
 farmers must their cows milk but I must that as farmer not  
 ‘Farmers have to milk their cows. But, I (#as a farmer) do not.’

If *ich* is interpreted referentially, an incoherence connected to the *als*-phrase, *als Bauer*, arises since it conveys that the properties of being a farmer and of not milking one’s cows are connected in general (cf. Appendix A1). This is, of course, in conflict with the generalization expressed by the first sentence. If the *als*-phrase is omitted, the sequence is coherent, and expresses that the speaker sees himself as an exception to the rule.

<sup>8</sup>For this argument, it is assumed that the verb *sich mit jmd. identifizieren* (Engl. ‘to identify with someone’) needs to be read as an abbreviation for the semantic content of the primitive “identifies-with”-relation.

- b. *Wenn Peter ein Bauer wäre mit dem du dich identifizierst, dann*  
 if Peter a farmer were with who you you identify then  
*müsste er seine Kühe melken.*  
 must.KONJ he his cows milk  
 ‘If Peter were a farmer and you were to identify with him, then he would  
 have to milk his cows.’

Neither counterfactual in (21) is supported; in fact, the counterfactual statements that are supported by (12-a) and (13-a) are those that are also supported by the sentences in (18), see (22).

- (22) a. *Wenn Peter ein Bauer wäre, dann müsste er seine Kühe melken.*  
 if Peter a farmer were then must.KONJ he his cows milk  
 ‘If Peter were a farmer, then he would have to milk his cows.’  
 b. *Wenn Peter ein Bauer wäre, dann müsste er seine Kühe melken.*  
 if Peter a farmer were then must.KONJ he his cows milk  
 ‘If Peter were a farmer, then he would have to milk his cows.’

The third issue concerns the question whether the pragmatic effects that are at the heart of the observed participant-oriented effects are captured adequately if the descriptive content is interpreted in the restrictor of *Gen*. I argue that this is not the case. The participant-oriented effects of *ich* and *du* are the result of additional content contributed by *ich* and *du* which comments on the truth-conditional content. The additional content is not part of the truth-conditions, though. Consider (23).

- (23) *Ich kann doch als Brautpaar nicht von meinen Gästen erwarten, dass*  
 I can PRT as bridal-couple not from my guests expect that  
*sie mir quasi die Feier finanzieren!*  
 they me/him more-or-less the party finance  
 ‘A bridal couple can’t expect their guests to more or less pay for the party!’<sup>9</sup>

By uttering (23), the speaker does not talk about the set of bridal couples that she empathizes with, but about bridal couples in general for which it is also communicated that the speaker empathizes with them. That is, the participant-oriented content seems to behave similar to appositions and expressive content. Both appositions and expressives always comment on the entire asserted content (cf. Potts 2005).

In addition to these problems for the impersonal uses, the same three problems for the referential uses arise that were discussed in Section 2.6:

First, assuming descriptive content for the referential uses of *ich* and *du* goes against the property of “indicativeness” observed for the referential uses. In other words, first and second person pronouns never contribute descriptive content to the meaning of a sentence (cf. Sections 1.5.2 and 2.5.1).

<sup>9</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

Second, the treatment of the referential uses as quantificational expressions is counter-intuitive. Since the proposal can be seen as a special variant of Russellian definite descriptions (cf. Russell 1905), the interaction between the semantic contribution of the pronouns with logical and intensional operators, e.g. negation, comes out as counter-intuitive.

And lastly, the account predicts that the referential interpretation is a last resort interpretation. This is in conflict with the fact that the referential uses are the predominant uses of first and second person singular pronouns.

The main conclusion that needs to be drawn from this discussion is that the account for first and second person singular pronouns put forth in Section 2.5.3 needs to be changed with respect to two points: (i) finding an adequate analysis for the pragmatic effects connected to the impersonal uses, and (ii) assigning a proper “referential” semantic contribution to referentially used first and second person singular pronouns.

An important step that affects both of these points is to reconsider the motivation for the assumption of descriptive content in Chapter 2: The descriptive content is a result of the interpretation of the complex syntactic structure assigned to first and second person singular pronouns. This complex structure was adopted to model the three-component account in Nunberg (1993). However, it is not part of Nunberg’s original account as such to assume descriptive content for pronouns! It is purely a result of the syntacticized formalization of Nunberg’s account proposed in Elbourne (2008) and of its adaptation in Section 2.5.3. Hence, the necessary step is to discard the the complex syntactic structure that is assumed for personal pronouns.

If the underlying structure is discarded, however, the quest for an account that captures both the referential and the impersonal uses of personal pronouns is put back on square one. So, should we start over? Another possibility to unify the impersonal and referential uses is briefly sketched in the Conclusion. In this chapter, however, I do not aim at proposing another unified account for the referential and the impersonal uses.<sup>10</sup> In what follows, I concentrate on giving an adequate account for the impersonal uses of *ich*, *du*, and *man*. For the referential use of *ich* and *du*, I adopt a directly-referential analysis as proposed in e.g. Kaplan (1978 [1989]) or Kratzer (2009).

Based on the discussion above, the following desiderata for any model of the semantic contribution and pragmatic effects of impersonally used *ich* and *du* (and *man*) can be identified.

- *Semantic desiderata*: The impersonal uses of *ich*, *du*, and *man* need to come out as truth-conditionally equivalent. Sentences containing these pronouns need to express the same generalizations as ordinary generic sentences.

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<sup>10</sup>Note that with the decision not to propose a unified account, I do not want to claim that the discussion in this section rebuts all possible approaches towards a unified account.

- *Pragmatic desiderata*: The component that is responsible for the pragmatic effects of *ich*, *du*, and *man* does not contribute content to the truth-conditions of a sentence. Its only function is to comment on the truth-conditional content of the sentences containing these pronouns.

These desiderata are at the heart of the account proposed in Section 4.5.

## 4.3 An analysis of the pragmatic effects of *one*

### 4.3.1 Moltmann's account of English *one*

In this first subsection of Section 4.3, I review the account for the English impersonal pronoun *one* put forth in Moltmann (2006, 2010a,b), for which the speaker-oriented effects observed for *one* play a central role. Moltmann argues that observations regarding the appropriate contexts of use for *one*, as well as its speaker-orientation are a reflex of a special meaning component. This component relates the individuals for which the generalization is expressed to certain individuals in the sentential and non-sentential context.<sup>11</sup>

In the following subsection, I discuss the problems that arise for Moltmann's formal account. I argue that neither formalization for the semantic contribution of *one* proposed by Moltmann adequately captures the pragmatic effects that she observes.

In a series of papers, Moltmann (2006, 2010a,b) investigates the semantic and pragmatic properties of the English impersonal pronoun *one*. She argues that the pragmatic properties of *one*—specifically those connected to its use—need to be considered in detail since they are the basis for most intuitions regarding its meaning. The following observations on the semantic and pragmatic behavior of *one* are seen as central.

First, Moltmann observes that *one* is only acceptable in certain linguistic contexts. It can co-occur only with a subset of the predicates that occur with other types of nominal expressions in generic sentences. Consider examples (24-b) and (25-b), in which *one* is contrasted with the nominal expressions *the typical person* and *people*.

- (24) a. ??*One has a nose.*  
 b. *The typical person has a nose.*  
 (Moltmann 2006:264)

- (25) a. ??*One lives in a big city.*  
 b. *People live in a big city.*  
 (Moltmann 2006:264)

<sup>11</sup>Moltmann calls the impersonal pronoun *one* “generic *one*” to distinguish it from its indefinite counterpart (cf. Section 2.2). Moltmann's terminology will be adapted to the terminology used in this thesis.

These judgements, Moltmann suggests, can be generalized to the following restriction on co-occurring predicates:

- (26) *Generalization:* The impersonal pronoun *one* cannot be used in sentences that express generalizations about characteristic properties, locations, psychological states, or habits.

In contrast, predicates that describe a possible experience or action by the speaker co-occur particularly well with *one*, see (27).

- (27) *One can sleep on this sofa.*  
(Moltmann 2010b:203)

The strength of Moltmann's restriction on co-occurring predicates, however, is relativized by a related observation: the sentences in (24-b) and (25-b) are acceptable when they are used in conditionals (28-a), under intensional operators (28-b), or when they are read as requirements or norms, instead of descriptive generalizations.

- (28) a. *If one has a nose, one can breathe.*  
(Moltmann 2006:265)  
b. *One may dream that one does not have a nose.*  
(adapted from Moltmann 2006:265)

Second, Moltmann observes that to be able to utter a sentence containing *one*, it suffices for the speaker to have checked whether the predicate holds for herself; the speaker's subjective experience provides enough epistemic grounds to state the generalization. Moltmann illustrates this by comparing sentences containing *one* with ordinary generic sentences. Compare (29-a) and (29-b).

- (29) a. *Sometimes one receives strange advertisements in the mail.*  
b. *Sometimes people receive strange advertisements in the mail.*  
(Moltmann 2006:268)

Moltmann argues that to utter (29-a), it suffices if the speaker at least once received strange advertisements herself. That is, the speaker may generalize a possibly singular personal experience. For (29-b), by contrast, the speaker must have independent evidence that there exists a regularity for people with respect to receiving strange advertisements.

In fact, the speaker's actual personal experience is not even strictly required to serve as the grounds on which a general statement expressed with *one* is based. The speaker can also just pretend to be in the situation described by the generic sentence, and simulate the relevant experience. Moltmann illustrates this with (30).

- (30) *One can see me from the entrance.*  
(Moltmann 2010b:202)

Since the speaker of (30) can never have the actual experience of seeing himself from the entrance in question, his subjective experiences cannot be required as the epistemic grounds for (30). However, if the speaker pretends to take the point of view of another individual standing at the entrance, he may simulate the experience of seeing himself from the entrance. This simulation can then serve as the grounds for uttering (30). Example (31) also illustrates the same point.

- (31) *If one is an angel, one is neither human nor divine.*  
(Moltmann 2010a:28)

To be able to utter (31), the speaker simulates that he is an angel, and generalizes his resulting property of neither being human nor divine to angels in general.

Third, Moltmann (2010b) discusses an additional observation. Two speakers may disagree with each other by using sentences containing *one* even though both have valid reasons for uttering the respective generalization. This disagreement pattern arises for sentence pairs like the one in (32).<sup>12</sup>

- (32) A: *One can sleep on this sofa.*  
B: *One can not sleep on this sofa.*

Moltmann argues that even though A and B in example (32) contradict each other, neither A nor B can be held at fault with respect to their reasons for uttering the respective sentence. This apparent “faultlessness” can be connected to one of Moltmann’s previous observations. Since *one* is connected to the speaker’s personal experiences, A and B may simply have had different experiences. Therefore, they may argue for contradictory generalizations. Nevertheless, Moltmann argues, only one of the generalizations in (32) can be a true statement.

Moltmann’s final observation, in her opinion, reveals a more general connection between the participants and the generalizations that are expressed. She argues that if a speaker states an established generalization, i.e. a generalization that has been established independently, using a sentence with *one*, his statement allows for an immediate “self-application” by the addressee.

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<sup>12</sup>Moltmann (2010b) compares the “faultless disagreement” dialogue for *one* in (32) with faultless disagreement dialogues found in the literature on predicates of personal taste, see (i).

- (i) A: *Pizza is tasty.*  
B: *Pizza is not tasty.*

Moltmann argues against both the relativist approaches (cf. Lasersohn 2005, 2009) and the contextualist approaches for predicates of personal taste, and extends her proposal for impersonal *one* to account for predicates of personal taste. For details see Moltmann (2010b).

- (33) *One is not allowed to enter the room.*  
 (Moltmann 2006:273)

The addressee of (33), Moltmann suggests, can immediately grasp whether the generalization applies to him or not by taking the first person point of view. From this point of view, he can then infer that he is not allowed to enter the room. In contrast, the ordinary generic sentence in (34), for instance, requires additional reasoning to derive that perhaps a prohibition for the addressee is expressed.

- (34) *People are not allowed to enter the room.*

In sum, Moltmann's observations reveal that the use of *one* is strongly tied to the personal experiences of the speaker, but also allows for other individuals to immediately put themselves into the speaker's perspective. Moltmann calls the connection of the use of *one* to actual or simulated subjective experiences of the first person the "quasi-first-person orientation" of *one*.<sup>13</sup>

Based on these observations, Moltmann (2006, 2010a,b) develops an analysis for *one*. She, however, does not adopt a standard proposition-based view on sentence meaning: she rejects the assumption that sentences denote propositions, and proposes that they denote "attitudinal objects" (cf. Moltmann 2003). That is, the semantic contribution of a sentence is the content that an attitude holder considers when evaluating the truth or falsity of that sentence. Moltmann introduces the concept of the "first person", which refers to any attitude holding individual. In every discourse context, the speaker and the addressee, but also other participants may take the place of the first person with respect to any given utterance.

In attitude reports, the quasi-first-person orientation of *one* can be made explicit. When a clause containing *one* is embedded under an attitude verb, the subject of the attitude report is argued to take the first person perspective with respect to the embedded clause, see (35).

- (35) *John found out that one can see the picture from the entrance.*

To capture this effect, Moltmann argues that *one* is in some sense connected to (the experiences of) the "first person", i.e. any individual that can consider the truth of the sentence containing *one*.

Moltmann (2006, 2010a) analyzes the connection to the speaker's actual or simulated experience and the possibility to use *one* in sentences expressing established generalizations as two licensing strategies that guide the use of *one*. In her formal proposal,

<sup>13</sup>Moltmann (2006, 2010a) argues that *one* is a *de se* expression based on a comparison with PRO. In Moltmann (2010b), she distinguishes two kinds of expressions with first-person-oriented content: (i) quasi-first-person generic expressions, and (ii) *de se* expressions. Given further evidence distinguishing *one* and PRO, she reanalyzes *one* as a quasi-first-person generic expression.

Moltmann attempts to capture both licensing strategies. To do this, she assumes that sentences containing *one* are generic sentences, and that similarly to indefinite nominal expressions in ordinary generic sentences, *one* introduces a free variable which is bound by a generic operator *Gen* at sentence level.<sup>14,15</sup>

The quasi-first-person orientation of *one* is modelled as an additional component contributed by the pronoun. Specifically, *one* in fact contributes a complex expression that contains a free individual variable. For this complex expression, two different versions are proposed in Moltmann (2006) and Moltmann (2010a,b), respectively. Both versions are formulated in Moltmann's system of attitudinal objects (cf. Moltmann 2003), but differ with respect to the specific form of the content that *one* is taken to contribute.

In Moltmann (2006), the contribution of *one* is proposed to be a complex variable of the form in (36).

$$(36) \quad \langle x, \lambda z.z = y \rangle$$

The first component  $x$  is a free variable ranging over individuals. This is the variable that is bound at sentence level by *Gen*. The second component is intended to capture the first-person-orientation of *one*. To this end, the free variable  $y$  is assumed to be bound at sentence level by a  $\lambda$ -operator, which forms an argument slot for the first person.

For complex variables of the form in (36), predication is as defined in (37).

$$(37) \quad \text{A predicate } P \text{ is taken to be true of } \langle x, M \rangle \text{ iff } P \text{ is true of } x \text{ as if it was } M. \\ (\text{Moltmann 2006:270})$$

This definition, Moltmann argues, takes the content of the second component as the description under which a property is ascribed to an individual in the sense of Lewis (1979a). Lewis defines ascription of a property  $P$  to an individual  $x$  under a description  $Z$  by an attitude holder  $a$  as follows.<sup>16</sup>

<sup>14</sup>Moltmann (2010b) assumes a simplified version of Greenberg's modal account for the generic operator (cf. Greenberg 2007). Consider (i).

(i)  $\forall w' \forall x [wRw' \ \& \ x \in D(w') \ \& \ N(w')(x) \ \& \ C(w')(x) \ \rightarrow \ P(w')(x)]$   
(adapted with minor changes from Moltmann 2010b:201)

$R$  models the accessibility relation,  $D(w')$  models the domain of individuals in  $w'$ ,  $N$  and  $C$  denote the restrictions to relevantly normal and contextually relevant individuals, and  $P$  is the matrix predicate. This specific proposal is never explicitly related to the final proposal for *one*.

<sup>15</sup>Moltmann's analysis for *one* is comparable to the analyses of impersonal pronouns in Condoravdi (1989), Malamud (2006, 2007), and Chierchia (1995b) (cf. Section 2.2.2).

<sup>16</sup>Lewis (1979a) is concerned with belief *de dicto*, *de re*, and *de se*. He argues that in the case of an attitude *de se*, the complement of the attitude verb is a property, and not a proposition (*pace* eg. Stalnaker 1981). He generalizes this view to *de re* ascriptions.

- (38) An individual  $a$  ascribes the property  $P$  to an individual  $x$  under a description  $Z$  iff
- a.  $a$  bears the relation  $Z$  uniquely to  $x$
  - b.  $a$  self-ascribes the property of bearing relation  $Z$  uniquely to something which has property  $P$
- (Lewis 1979a:539)

In contrast to Moltmann, however, Lewis (1979a) does not assume that the truth-conditional content of a sentence that expresses an ascription of a property to an individual contains the description  $Z$ . Ascription of properties under a description is seen as a non-linguistic act.<sup>17</sup>

Consider Moltmann's (2006) final formalization of example (39-a) in (39-b). This analysis reflects that Moltmann (2006) essentially interprets sentences containing *one* as properties that are self-ascribed *de re* by any "first person".

- (39) a. *One can see the picture from the entrance.*  
 b.  $\lambda y. \text{Gen } x[\text{can-see-the-picture-from-the-entrance}(\langle x, \lambda z.z = y \rangle)]$
- (Moltmann 2006:272)

If one interprets (39-b) in the style of Lewis' proposal in (38-b), it comes out as: (i) a first person  $a$  ascribes the matrix predicate ( $=P$ ) to the individuals in the domain of the generically bound variable  $x$  under the description that  $a$  is identical with  $x$  ( $=Z$ ), and (ii) self-ascribes the property of standing in the identity-relation ( $=Z$ ) to something that has the property expressed by the matrix predicate ( $=P$ ). In other words, example (39-b) expresses a generalization for the individuals in the domain of  $x$ , and conveys that the first person ascribes the property to the individuals in the domain of  $x$  "as if he would ascribe it to himself".

Note that Moltmann's (2006) analysis focuses nearly exclusively on the conditions placed on the use of *one* in connection to the personal experiences of the first person. She does not discuss the conditions regarding the truth or falsity of what would traditionally be analyzed as the truth-conditional content of the generic sentence. Her views regarding the truth-conditional content of the generalizations that are expressed are briefly addressed in Moltmann (2010b), see below.

In her later papers, Moltmann (2010a,b) proposes that the quasi-first-person orientation of *one* has to be seen as the speaker attributing the predicate of the sentence to the set of "normal" individuals "as individuals that the speaker identifies with". That is, she dismisses her idea to treat first-person-orientation in the sense of Lewis (1979a), and adopts *qua*-predication based on the work in Fine (1982). She motivates

<sup>17</sup>Lewis (1979a:538) states, "We needn't take the so-called descriptions as verbal, thereby limiting ourselves to what can be expressed in some particular language. (...) We might take descriptions as properties, not as particular expressions of properties in thought and language."

this change by an observation on English *as*-phrases, which are analyzed as expressing *qua*-predication in Szabo (2003) and Asher (2006, 2011).<sup>18</sup>

The crucial intuition is that *as*-phrases seem to make explicit the epistemic grounds for the ascription of a property to an individual. For instance in (40), the *as*-phrase, *as a father*, seems to give an explanation for John's knowledge regarding the behavior of children.

- (40) *John as a father knows how children behave.*  
(Moltmann 2010b:206)

For *qua*-predication, Moltmann offers the definition in (41), which is an adaptation of the definition proposed in Fine (1982).<sup>19</sup>

- (41) *Qua*-predication forms a new type of individual,  $x$  qua  $P$ . The three defining properties of *qua*-individuals formed in this way are
- a.  $x$  qua  $P$  exists in a world  $w$  whenever  $P(x)(w)$
  - b.  $x$  qua  $P = x'$  qua  $P'$  iff  $x = x'$  and  $P = P'$
  - c.  $x$  qua  $P$  has a property  $Q$  in  $w$  iff  $Q(x)(w)$  whenever  $P(x)(w)$ , and the *qua*-property  $P$  provides epistemic grounds for  $x$  being  $Q$ .

Building on this definition, Moltmann analyzes *one* as an expression that introduces a variable over *qua*-individuals, i.e.  $x$  qua  $[\lambda y. \text{the speaker identifies with } y]$ . Formally, this is expressed as in (42).<sup>20</sup>

- (42)  $\text{qua}(x, \lambda y. \text{identifies-with}(y)(z))$

The individual variable  $x$  in (42) is bound by the generic operator *Gen*. The individual

<sup>18</sup>The work on *as*-phrases in linguistics (e.g. Landman 1989; Jäger 2001, 2003; Szabo 2003; Asher 2006) and the work on *qua*-predication in philosophy (e.g. Fine 1982; Lewis 2003) have been brought together in Szabo (2003). This view was taken up in Asher (2006, 2011) and adopted in Moltmann (2010a), who cites Asher (2006). Note, however, that Fine (1982) does not connect *as*-phrases to *qua*-predication. That is, his definition is not intended to capture the behavior of these linguistic expressions.

<sup>19</sup>Fine's (1982) original definition of *qua*-predication is as in (i).

- (i) A *qua*-object is a special kind of entity, consisting of an individual  $a$ , together with a property  $P$ , and denoted by ' $a$  qua  $P$ ', which observes the following conditions:
- a. Existence:  $a$  qua  $P$  exists at  $t$  in  $w$  iff  $a$  is  $P$  at  $t$  in  $w$
  - b. Identity:  $a$  qua  $P = b$  qua  $Q$  iff  $a = b$  and  $P = Q$ ;  $a \neq a$  qua  $P$
  - c. Inheritance: If  $a$  qua  $P$  exists at  $t$  in  $w$  and  $Q$  is normal,  $a$  qua  $P$  is  $Q$  iff  $a$  is  $Q$   
(Fine 1982)

<sup>20</sup>Moltmann's original proposal is given in (i).

- (i)  $\text{qua}(x, \lambda y[Iyz])$   
(Moltmann 2010b:206)

The name of the identification relation "*I*" is substituted above with "identifies-with" to increase readability.

variable  $z$ , on the other hand, is again bound by a  $\lambda$ -operator at sentence level to derive a property that can be self-ascribed by any first person.

The identification relation  $[\lambda y.\lambda z.\text{identifies-with}(y)(z)]$  models the quasi-first-person orientation of *one*. The idea behind this relation is that whenever a speaker expresses a generalization that is based on his own personal experiences, he needs to abstract from his own particular person and the specific circumstances of his experiences. In other words, he has to identify himself with those individuals which, in his view, count as the relevantly non-exceptional individuals for the generalization.

Moltmann argues that the *qua*-predication in (42) is not part of the truth-conditions of a sentence containing *one*. Hence, it does not act as a restriction on the set of individuals over which the generic operator quantifies. Instead, the *qua*-predicate, i.e.  $\lambda y.\text{identifies-with}(y)(z)$ , specifies the first person's epistemic grounds. That is, from the speaker's perspective *qua*-predication expresses the epistemic grounds underlying his utterance. How *qua*-predication as defined in (41) captures this intuition is, however, unclear to me (cf. the discussion in Section 4.3.2).

For (43-a), the semantic value that results from the speaker  $c_S$ 's self-ascription is given in (43-b).

- (43) a. *One can see the picture from the entrance.*  
 b.  $\text{Gen } x[\text{can-see-the-picture-from-the-entrance}(\text{qua}(x, \lambda y.\text{identifies-with}(y)(c_S)))]$

So in sum, Moltmann suggests that the impersonal pronoun *one* contributes a complex expression with two integral parts: (i) a free variable  $x$  which is bound by the generic operator *Gen* at sentence level and (ii) a second part that models the quasi-first-person orientation of *one*. The idea behind the second part is that the quasi-first-person orientation results from an explicit connection to the speaker's experiences that form his epistemic grounds.

### 4.3.2 A critical review of Moltmann's claims

The aim of this subsection is to critically review Moltmann's observations and her conceptual and formal analysis of *one* that were presented in the previous subsection. I agree that generic sentences containing *one* differ in certain respects from ordinary generic sentences, and that the meaning of *one* involves speaker-oriented content that is not part of the truth-conditional content. Nevertheless, I believe that Moltmann's discussion of the properties of *one* and her formal account raise certain issues.<sup>21</sup> I first

<sup>21</sup>For the course of this discussion, I call Moltmann's quasi-first-person-orientation "speaker-orientation" since the speaker necessarily takes the position of first person when he utters the sentence. Since I do not adopt Moltmann's view on the meaning of sentences as attitudinal objects, I prefer to retain the terminology introduced in Chapter 1.

bring up a minor point of criticism regarding her data discussion and the conclusions she draws from it. The second problem I address, however, concerns the heart of her proposal in Moltmann (2010a,b): her decision to model the speaker-oriented content via *qua*-predication.

First, I address Moltmann's observations regarding the oddness of certain sentences containing *one*. Moltmann observes that the sentences in (44) in contrast to those in (45) seem to be marginal. She proposes that this contrast is the result of a restriction on predicates that can co-occur with *one*.

- (44) a. ??*One has a nose.*  
 b. ??*One lives in a big city.*  
 c. ??*One breathes.*  
 d. ??*One is nervous.*  
 (Moltmann 2006:264)

- (45) a. *One sometimes thinks one's life is too short.*  
 b. *One can see the picture from the entrance.*  
 c. *One can sleep on the sofa.*  
 (Moltmann 2010b:201ff)

In Moltmann (2006), she identifies the predicates that describe characteristic properties, locations, psychological states, or habits—like those in (44)—as those that are odd when they co-occur with *one*. This view is extended in Moltmann (2010b), where she argues that in fact only predicates that describe possible experiences or actions—like those in (45)—are acceptable with *one*; specifically, *one* is restricted to predicates for which self-application requires only “self-knowledge”.<sup>22</sup>

I argue that the underlying contrast exemplified in (44) and (45) is not captured by Moltmann's restriction, and that the oddness in (44) is not the result of a restriction on co-occurring predicates. Instead, I suggest that it is connected to a lack of material that qualifies the individuals and situations that are generalized over, e.g. adverbs of quantification, adjectives, or spatio-temporal adverbials. This alternative explanation is supported by the observation that the sentences in (44) improve if additional material is added, see (46).

- (46) a. *In Hollywood, one has a perfectly straight nose.*  
 b. *One rarely lives in a big city.*  
 c. *On top of a mountain, one breathes more easily.*  
 d. *One is rarely nervous in front of one's parents.*

<sup>22</sup>Self-knowledge is specified as “knowledge of one's own experiences, intentions, and actions” (Moltmann 2010b:203).

The predicates in (46) still express the same characteristic properties, locations, psychological states, or habits as in (44). Nevertheless, the sentences in (46) are considerably better than those in (44).

The alternative explanation given above seems to be connected to, and is in line with Moltmann's own observation that the sentences in (44) are fine when they are embedded in conditionals and under intensional operators. Furthermore the good examples in (45) also contain additional specifying material. Incidentally, if there is indeed a need for specifying material, this would fit with the observation for German impersonally used *ich* and *du* that certain linguistic elements have a supporting effect for the availability of the impersonal reading (cf. Section 1.3).

Another indication that Moltmann's suggested restriction on predicates is not completely on the right track is that Moltmann's generalization does not hold for predicates that are supposed to fall into the class of admissible predicates, but which do not co-occur with qualifying material. Consider the examples in (47), which are shortened versions of (45).

- (47) a. ??*One thinks something.*  
 b. ??*One sees a picture.*  
 c. ??*One sleeps.*

Additionally, Moltmann's description of the set of predicates that may occur with *one* also does not seem to capture all of the felicitous examples in (45). It is unclear to me, for instance, how "being able to see the picture from the entrance" constitutes an experience or an action. A person may have the experience of seeing the picture from the entrance, and can conclude from this experience that he can see the picture. However, it seems strange to me to say that the ability can be experienced *per se*.

Another motivation for Moltmann to formulate this particular restriction on co-occurring predicates is provided by the contrast in (48).

- (48) a. ??*One lives in a big city.*  
 b. *People live in a big city.*  
 (Moltmann 2006:264)

To my mind, this contrast cannot be accounted for by Moltmann's restriction. Instead, the contrast seems to arise because indefinite noun phrases in ordinary generic sentences contribute their own descriptive content, e.g. *people* in (48-b), which acts as qualifying material. The impersonal pronoun *one* lacks this descriptive content.

The same difference in descriptive content can also be observed for German impersonally used *ich*, *du*, and *man*. First and foremost, their domain of quantification seems to depend on the content of the generalization. For sentences like (49), i.e. if *man* is used to express moral norms or rules, the set of people for whom the rule is

stated are those members of the society that the moral code applies to. The subset of non-exceptional individuals that is then quantified over is the set of well-behaved and morally sound individuals.

- (49) *Man respektiert die Rechte anderer.*  
 one respects the rights others  
 ‘One respects the rights of others.’

For generalizations that do not express moral rules, the set of individuals that are considered to be non-exceptional differs. For example (50), the non-exceptional individuals are those that are subject to the relevant body of rules.

- (50) *Man darf das Zimmer nicht betreten.*  
 one is-allowed the room not enter  
 ‘One is not allowed to enter the room.’

Example (50) contrasts with the ordinary generic sentences in (51), for which the relevant domain of individuals is restricted by the descriptive content *Leute* and *Menschen* (Engl. ‘people’ and ‘humans’, respectively) in addition to the type of rule that is expressed.<sup>23</sup>

- (51) a. *Unbefugte dürfen das Zimmer nicht betreten.*  
 unauthorized-people are-allowed the room not enter  
 ‘Unauthorized people are not allowed to enter the room.’  
 b. *Menschen dürfen das Zimmer nicht betreten.*  
 humans are-allowed the room not enter  
 ‘Humans are not allowed to enter the room.’

Crucially, the sentence in (50) does not express the same generalization as either sentence in (51). To restrict the domain of individuals for the impersonal pronoun *man* to a specific set of individuals, an appropriate *als*-phrase has to be added; otherwise (50) stays vague. Consider the example in (52).

- (52) *Man darf als Unbefugter/Mensch das Zimmer nicht betreten.*  
 one is-allowed as unauthorized-person/human the room not enter  
 ‘As an unauthorized person/a human, one is not allowed to enter the room.’

Note that since the domain of quantification of the generic operator cannot be restricted contextually, adding a restriction with an *als*-phrase (or for *one*, an *as*-phrase) is the only possible strategy for *man* aside from formulating a full conditional (cf. Section 3.3.1).

So in sum, Moltmann’s examples in (44) and (45) rather seem to illustrate that additional qualifying material improves sentences containing *one*, similarly to the effect

<sup>23</sup>Example (51-b) might sound odd at first. In a science fiction context, though, in which different species of aliens exist, a specific rule for humans might not seem so out of place.

of co-occurring, frame-setting material that was observed for the impersonal uses of *ich* and *du*. The reason for this behavior, as well as its connection to the supporting effects of co-occurring material observed with respect to impersonally interpreted *ich* and *du* requires a more detailed look at the data, which is left for further research.

Before discussing the second, major issue for Moltmann’s formal account, I first-off want to address a general weakness of Moltmann’s account: Moltmann is not explicit enough on what the truth-conditions of the sentences containing *one* are, and how they are built up. To build a foundation for the criticism to come, I try to make explicit how I interpret Moltmann’s discussion of her formalization of speaker-orientation. I start out with the observation of “faultlessness”.

For the sentences in example (53), Moltmann argues that the two speakers may be faultless in their grounds for stating the respective generalization, but still only one of them makes a true statement.

- (53) A: *One can sleep on this sofa.*  
 B: *One can not sleep on this sofa.*  
 (Moltmann 2010b:203)

To my mind, this suggests that the content of the generalizations that are expressed in (53) is independent of the epistemic grounds of the speakers A and B. Given Moltmann’s (2010b) proposal, this means that the *qua*-predication is not part of the truth-conditions of a sentence containing *one*. Therefore, the truth-conditional content of A’s utterance in (53) seems to be as in (54).

- (54) Gen  $x$ [can-sleep-on-this-sofa( $x$ )]

This formula matches the proposal for sentences containing impersonal pronouns in Condoravdi (1989) and Malamud (2006, 2007), but differs from Moltmann’s own formal proposal.

Unfortunately, Moltmann is not entirely clear in her discussions with respect to the restrictive or non-restrictive effects of the speaker-oriented content. In one and the same paragraph, she states that the *qua*-predication does and does not affect the truth-conditions of the generic sentence. Consider the following quotes.

“In generic-*one* sentences the gloss<sup>24</sup> only serves to provide an epistemic basis for the application of the predicate; it does not affect the truth-conditions of the sentence.” (Moltmann 2010b:206 with the footnote added for clarification)

“The gloss will somewhat influence the domain of quantification, though: the domain will consist of entities the speaker identifies with.”  
 (Moltmann 2010b:206)

<sup>24</sup>I.e. the *qua*-property  $[\lambda y.\text{identifies-with}(y)(z)]$ .

If the *qua*-predicate is assumed to restrict the generic operator, it is predicted that sentences containing *one* express different generalizations than ordinary generic sentences (cf. Section 4.2). Intuitively, however, the sentences in (55) express the same generalizations regarding farmers.<sup>25</sup>

- (55) a. *As a farmer, one has to milk one's cows.*  
 b. *Farmers have to milk their cows.*

If the set of farmers for which the generalization in (55-a) is stated were restricted to those that the speaker identifies with, the following counterfactual inference should be supported. This is not the case.

- (56) *If Peter were a farmer with whom I identify, he would have to milk his cows.*

So, whatever the effect of *qua*-predication is, the data clearly suggests that the speaker-oriented content does not restrict the domain of quantification of the generic operator. This conclusion is, however, not captured if the speaker-orientation of *one* is modelled with *qua*-predication. This is my main point of criticism of Moltmann's formal proposal.

Moltmann's motivation for adopting *qua*-predication is the apparent parallel between the behavior of the speaker-oriented content and the contribution of English *as*-phrases. For example (57), Moltmann argues that the *as*-phrase, *as a father*, does not affect the truth-conditional content of the sentence, i.e. 'John knows how children behave'. It only adds the epistemic grounds for why John knows how children behave: because he is a father.

- (57) *John as a father knows how children behave.*  
 (Moltmann 2010b:206)

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<sup>25</sup>For example (55-a) another issue arises. Two *as*-phrases that perform the same function cannot co-occur in a sentence. Consider (i).

- (i) *\*John as a judge as a janitor earns \$50,000.*  
 (Szabo 2003:392)

That no two *as*-phrases may co-occur, however, is not a universal restriction on *as*-phrases, see (ii).

- (ii) *As a teenager, Gerald finds success as a member of the Hazelwood Tigers basketball team.*  
 Taken from: <http://sharondraper.com/bookdetail.asp?id=5>

Crucially in cases like (ii), the function of the two *as*-phrases is different. In (ii), the first *as*-phrase, *as a teenager*, acts like a frame-setting adverbial, and restricts the content of the sentence to those past times in which Gerald is/was a teenager. The second *as*-phrase performs a similar function as the *as*-phrase in (58) below, i.e. it provides the role in which Gerald finds success.

Whether it is predicted by the assumption that *qua*-predication captures the speaker oriented content that co-occurring overt *as*-phrases, as in (55-a), are ungrammatical, therefore depends on whether the *qua*-predication and the overt *as*-phrase are functionally different. Whether this is the case will not be determined in detail, since the use of *qua*-predication to model speaker-orientation suffers from, in my opinion, even more serious problems.

Two issues for this view arise: (i) the parallel that Moltmann draws between *as*-phrases in English and the speaker-oriented content of *one* only takes into account a fraction of the observations regarding the behavior of *as*-phrases, which do, in fact, interact and affect the truth-conditional content of the sentences in which they occur, and (ii) the adaptation of the axioms proposed for *qua*-predication in Fine (1982) in fact does not capture the behavior of English *as*-phrases.

Let us consider the first point. The *as*-phrase in (57) intuitively does not have an effect on the truth-conditions of the sentence, i.e. it does not restrict the predication. Since John's knowledge on how children behave will persist even if he ceases to be a father (if this is at all possible), the only function of the *as*-phrase in (57) seems to be to communicate that John's property of being a father has a relevant connection to John's knowing how children behave. This behavior of the *as*-phrase in (57) is, however, not observable for all *as*-phrases. There are sentences in which *as*-phrases are used to contrast two different aspects of the same person, or to pick out one role among many for that person. In these sentences, the *as*-phrases have an effect on the truth-conditions of the sentence. Consider the sentences in (58).<sup>26</sup>

- (58) a. #*Peter earns 50.000 Euros, but he doesn't earn 50.000 Euros.*  
 b. *Peter as a judge earns 50.000 Euros, but he as a janitor doesn't earn 50.000 Euros.*

Example (58-a), which does not contain *as*-phrases, is inconsistent since a property and its negation are attributed to the same individual simultaneously. By contrast, in (58-b) this inconsistency disappears. If *as*-phrases had no effect on the truth-conditions of the sentences that contain them, and could in principle always be omitted, it would be expected that (58-a) and (58-b) are equally inconsistent. Similarly, the *as*-phrase in (59) needs to restrict Clark Kent to his Superman aspect since in his other role as a reporter at the Daily Planet, he does not rescue people.

- (59) *As Superman, Clark Kent rescues people.*

<sup>26</sup>For German *als*-phrases, the split regarding the different functions is encoded in the syntactic positions of these items.

- (i) a. *Hans als Bauer verdient 3000 Euro.* (adnominal)  
 Hans as farmer earns 3000 Euros  
 'Hans, who is a farmer, earns 3000 Euros.'  
 b. *Hans verdient als Bauer 3000 Euro.* (adverbial)  
 Hans earns as farmer 3000 Euros  
 'As a farmer, Hans earns 3000 Euros.'

The contribution of German adnominal *als*-phrases is similar to that of *as a father* in (57); these *als*-phrases seems to behave like appositions. Adverbial *als*-phrases can also be interpreted like *as a father* in (57), but their preferred interpretation is the restrictive "in-this-role" reading exemplified by the *as*-phrases in (58). For a detailed discussion of the properties of German *als*-phrases, see Appendix A1.

Hence, something more has to be said about the lack of an effect on the truth-conditions of *qua*-predication in the case of *one*.

Another observation made for *as*-phrases is that predication on aspects that are introduced by *as*-phrases is in general not monotone. That is, a property  $Q$  that holds of  $x$  qua  $P$  does not necessarily hold of  $x$  simpliciter. Consider example (60).

- (60) *As a judge, Peter earns 50.000 Euros, and as a janitor, he earns 10.000 Euros.*
- a.  $\not\Rightarrow$  *Peter earns (only) 50.000/10.000 Euros.*
  - b.  $\Rightarrow$  *Peter earns 60.000 Euros.*

This behavior of *as*-phrases is not captured by the axioms adopted for *qua*-predication in (61).

- (61) *Qua*-predication forms a new type of individual,  $x$  qua  $P$ . The three defining properties of *qua*-individuals formed in this way are
- a.  $x$  qua  $P$  exists in a world  $w$  whenever  $P(x)(w)$
  - b.  $x$  qua  $P = x'$  qua  $P'$  iff  $x = x'$  and  $P = P'$
  - c.  $x$  qua  $P$  has a property  $Q$  in  $w$  iff  $Q(x)(w)$  whenever  $P(x)(w)$ , and the *qua*-property  $P$  provides epistemic grounds for  $x$  being  $Q$ .

The third axiom states that every property of the *qua*-entity is also a property of the individual *simpliciter*. Therefore, if it is assumed that *as*-phrases express *qua*-predication, it is predicted that the sentence in (58-b) should be inconsistent, and that the inference in (60-a) should be valid. Consequently, if *as*-phrases are kept as the overt linguistic model for the formal component that introduces speaker-orientation, a different, more adequate formalization for the effects of this component needs to be adopted (cf. Jäger 2001, 2003; Szabo 2003; Asher 2006, 2011).

An argument against using *as*-phrases as a motivating example for the speaker-oriented component, though, is that they are too restricted with respect to the constituents they can comment on. That is, properties expressed by *as*-phrases are strictly tied to a specific individual, i.e. the individual or individual variable that they are associated with. Consider the example and its representation in (62).<sup>27</sup>

- (62) a. *As fathers, most of my friends know how children behave.*  
 b.  $\text{KNOW}_w(\text{most of my friends qua father, how children behave})$

*As*-phrases do not restrict the domain of quantification of nominal quantifiers, including the quasi-universal quantifier introduced by the generic operator *Gen* (cf. Appendix A1). Without the *as*-phrase, example (62-a) would state that a subset of the speaker's friends know how children behave. The additional *as*-phrase in (62-a) intuitively con-

<sup>27</sup>The attitude verb *know* is represented by the operator  $\text{KNOW}$ , analogously to the  $\text{BELIEVE}$ -operator defined in Section 4.2.

veys that for all individuals in this subset, it is true that they are fathers. Crucially, this subset of the speaker's friends does not contain all of the speaker's friends that are fathers. Now, consider the scenario in (63).

- (63) **Scenario:** All of the speaker's friends are fathers, though not all of them are equally comfortable with their children. Some are still frequently surprised by their children's behavior.

In this scenario, (62-a) is true. This suggests that the *as*-phrase provides epistemic grounds for each individual separately, but not for the truth of the entire sentence. In other words, example (62) cannot express: 'Since all of the speaker's friends are fathers, it is for most of them the case that they know how children behave'; the fact that all of the speaker's friends are fathers is not conveyed to be the reason for why just most of them know how their children behave.

Analogously, the *qua*-predication in the interpretation proposed for the sentence in (64-a) can only provide epistemic grounds for single *qua*-individuals, i.e. for each possible value of the individual variable *x* separately.

- (64) a. *One can see the picture from the entrance.*  
 b. Gen *x*[can-see-the-picture-from-the-entrance  
     (*x qua* being identified-with by the speaker)]

In light of Moltmann's discussion about the background behind the speaker-oriented content, this behavior of *as*-phrases makes the wrong predictions regarding the speaker-oriented effect. Recall that Moltmann suggests that the speaker's actual or simulated experiences are taken as epistemic grounds for the generalization to hold. That is, given the assumption that other people would share the same experience, the speaker abstracts from the particulars of his experience, and generalizes it to all non-exceptional individuals. The connection between the speaker and these non-exceptional individuals is modeled with the "identifies-with" relation. If identification were to work like an *as*-phrase, though, it would be predicted that a sentence like (64-a) states a generalization for a certain set of individuals, but that independently of this generalization, the speaker identifies with all non-exceptional and exceptional individuals, i.e. the entire set of individuals. This does not capture the intuition that the speaker identifies with a set of people that he takes to be the non-exceptional individuals for the rule, and that by virtue of doing so believes himself to have reasonable grounds to utter the generalization truthfully.

So in sum, two conclusions can be drawn: (i) *as*-phrases as the linguistic expression of *qua*-predication do not constitute a good analogy for the speaker-oriented component of *one*, and (ii) without further clarificatory comments regarding its independence of

the truth-conditional content of a sentence, *qua*-predication is not an adequate tool to model the speaker-oriented content of *one*.

Regardless of these issues, however, Moltmann's observations provide important insights on the meaning of English *one*. The aim is therefore to model the meaning of *one* in such a fashion that allows for the speaker-oriented content to comment on the entire truth-conditional content of a generic sentence containing *one* without restricting it. A first attempt to do just that is discussed in Section 4.5. Before the new proposal is presented, a brief introduction to the literature on content that is communicated in addition, but that is not asserted is given in Section 4.4.

## 4.4 Classes of not-at-issue content: Presuppositions and implicatures

### 4.4.1 Traditional views on presuppositions and implicatures

An important observation pertaining to the meaning of expressions of natural language is that sentences convey various types of additional information that go beyond the literal meaning of these sentences, i.e. "what is said".<sup>28</sup> Sometimes the literal meaning is not even part of what the speaker intends his utterance to mean. To account for the difference between what is said and what the speaker means by saying it presents a challenge for any theory of meaning.

First and foremost, different types of meaning that can be conveyed need to be distinguished systematically. One important distinction is between the literal and non-literal meaning of sentences. Another distinction is made between content that is communicated "primarily", and content that is communicated "in addition" to the primary content. A principled discussion of these differences requires a precise definition of literal vs. non-literal meaning, and primary vs. additional content. These are the central and also the hardest questions that are addressed in the fields of semantics and pragmatics—also because any decision on the definitions and on the scope of these four terms are attractive as criteria to delineate the two fields. Needless to say, there is no consensus in the literature regarding these definitions.

One pervasive tradition in the literature defines the literal meaning of a sentence as the truth-conditional content that is built up in a compositional manner from the conventional meanings of the words occurring in that sentence. Non-literal meaning is

<sup>28</sup>Grice (1975) introduces the term "what is said" to distinguish the conventional, literal meaning of a sentence from its non-literal meaning in a context of utterance.

(i) *What is said*: "I intend what someone has said to be closely related to the conventional meaning of the words (the sentence) he has uttered" (Grice 1975:25)

defined negatively as the complement of literal meaning. This distinction provides a narrow view on the division between semantics and pragmatics: literal meaning is put into the domain of semantics while non-literal meaning is the subject of pragmatics. This narrow view is discussed in detail in Levinson (1983). This view has recently again been criticized as rather naive, and has been challenged by analyses of linguistic expressions that contribute their conventional meaning at a different “level” than the truth-conditional content of the sentence (cf. e.g. Potts 2005). Further challenges are provided by analyses of “pragmatic” processes affecting the composition of truth-conditional content (cf. e.g. Recanati 2010). For my investigations, particularly the former analyses are of specific interest.

I adopt Potts’s (2005) distinction between at-issue content and CI content as the distinction between content that is contributed primarily and content that is contributed in addition, respectively.<sup>29</sup> Hence, the primary content of a sentence is its asserted truth-conditional content. Any additional content that in some sense or other comments on the truth-conditional content is seen as independent. Content of this kind is either derived contextually on the basis of the truth-conditional content of the sentence, or is “triggered” by some lexical item in the sentence. Note that content that is contributed in addition to the primary content can nevertheless be true or false. In other words, it usually has its own truth-conditional content.

The aim for this section is to give a short overview of two types of non-primary content: presuppositions and implicatures. First, I give a brief overview of the traditional work on presuppositions and implicatures, and furthermore contrast conventional implicatures with conversational implicatures. For the rest of this section, I then focus on conventional additional content, i.e. presuppositions and conventional implicatures. For both classes, I present the diagnostic properties that have been proposed in the literature.

Traditionally, presuppositions and implicatures are seen as two distinct types of non-primary content. The difference between the two types lies in how they arise, and how the additional content interacts with the truth-conditional content of the associated sentence.

Presuppositions convey additional content that needs to be established in the discourse context such that the associated sentence can be uttered truthfully. In the literature on presuppositions, two prominent views need to be distinguished (cf. Beaver and Geurts 2011): (i) the purely semantic view, and (ii) the pragmatic view.<sup>30</sup>

On the semantic view, presuppositions express definedness conditions on the de-

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<sup>29</sup>Note that Potts (2005) does not use the terms “primary” and “in addition”.

<sup>30</sup>There is a considerable amount of literature on the accommodation of presuppositions, which for reasons of space will not be reviewed at this point. For a recent discussion of the problem of accommodation see von Stechow (2008) and Beaver and Geurts (2011).

notation of an expression. This way of thinking about presuppositions was notably developed first in Frege (1892) and then in Strawson (1950).

- (65) “One sentence presupposes another iff whenever the first is true or false, the second is true.” (taken from Beaver and Geurts 2011)

On this view, presuppositions are “triggered” by natural language expressions. The classical examples that are discussed in the literature are the definite article and factive verbs.<sup>31</sup> The definite article, for instance, is said to trigger a presupposition requiring uniqueness of existence. That is, it is presupposed that there is only one individual for which the descriptive content of the definite description holds. Consider (66).

- (66) *The king of France is bald.*

The definite description *the king of France* in (66) presupposes that there is only one, unique individual who is the king of France. If no unique individual of this kind exists, the definite description has no denotation.<sup>32</sup>

Two views can be found in the literature regarding the effect of presuppositional content that is not fulfilled in the context. On the first view based on Russell (1905), sentences with presuppositions that are not fulfilled are grouped with false sentences. The advantage of this analysis is that for sentences, bivalence regarding truth-values can be maintained. The second view is based on the proposal in Frege (1892) that was taken up in Strawson (1950) to give up strict bivalence. According to this view, sentences for which one or more presuppositions are not fulfilled are “undefined” with respect to their truth-values. That is, the consequence of presuppositions that are triggered in a sentence, but are unfulfilled in the context is that the sentence cannot be evaluated in the context.

The second prominent view on presuppositions is the pragmatic view of “speaker’s presuppositions” put forth in Stalnaker (1972, 1973, 1974) and later work. The central idea is that presuppositions express content that is taken for granted by the speaker, and that places a requirement on the context of use of the associated sentence. In contrast to the semantic view, presuppositions are not triggered by linguistic expressions; it is the speaker who may presuppose content when uttering a sentence. The effect of presupposed content in this view is as follows: only if this content is established in the discourse context, the content of the associated sentence may be added to the set

<sup>31</sup>Factive verbs presuppose the truth of their propositional argument. For example, the factive verb *know* in (i) presupposes that it is true that Peter is a spy.

(i) *John knows that Peter is a spy.*

<sup>32</sup>This presupposition is usually relativized to the context of utterance. In this case, it is required that there is only one, unique individual in the context of utterance for which the descriptive content holds (cf. Section 2.4).

of propositions that are mutually accepted as true by the discourse participants. If Stalnaker's (1978) notion of Common Ground is adopted as defined in (67), a presupposition can be defined as a requirement that the presupposed content be part of the Common Ground.

(67) Common Ground:

The common ground for a context is the set of all propositions that the discourse participants in that context mutually and publicly agree to treat as true for the purposes of the conversation (cf. Stalnaker 1978).

Chierchia and McConnell-Ginet (2000) give the following definition for presupposed content.

(68) Presupposition:

(An utterance of) a sentence *S* presupposes a proposition *p* if (the utterance of) *S* implies *p* and further implies that *p* is somehow already part of the background against which *S* is considered.

(Chierchia and McConnell-Ginet 2000:349)

One reason to adopt a more pragmatic view on presuppositions is that presuppositions that are not in the Common Ground at the time of utterance, i.e. are hearer-new, can sometimes be "accommodated" (cf. Lewis 1979b). This means (i) that the speaker assumes that the content of the presupposition is already established in the Common Ground, and (ii) that the addressee may agree to add the presupposed content that is missing from the Common Ground to it before evaluating the meaning of the associated sentence. In a purely semantic view of presuppositions as definedness criteria, accommodation is not expected to arise. The scenario and example in (69) illustrate accommodation.

**Scenario:** A talks to B about her family for the first time. It has been established that A's parents live in Salzburg, but she has not yet mentioned her brother.

(69) A to B: *My younger brother lives in Vienna, though.*

Presupposition: The speaker has a younger brother.

Since B does not know that A has a brother, the presupposition triggered by *my brother* in (69) is not part of the Common Ground. The addressee B, however, may tacitly adjust the Common Ground by adding the proposition that A has a younger brother. Against this new Common Ground, the primary content of (69) can be evaluated.

Accommodation is not available for all types of presupposed content. Assume that

(70) is a continuation of (69) above, and consider the presupposition that arises for *too*.<sup>33</sup>

(70) A to B: #*He played volleyball, too.*

Presupposition: There is another individual who played volleyball.

Example (70) illustrates that a presupposition associated with a sentence containing *too* is usually not easily accommodated. The availability of accommodation for various kinds of presuppositions has been argued to depend on how unsurprising and/or uncontroversial the presupposed content is (cf. von Stechow 2008).

In the more recent literature, also a mixed semantic/pragmatic view of presuppositions can be found. For instance, von Stechow (2008) assumes that there is a presuppositional component that is hard-wired in the lexical meaning of linguistic expressions, but that the pragmatic effects of presuppositions on the Common Ground are as proposed by Stalnaker (1972, 1973, 1974) and later work.

Finally, one last topic that is discussed frequently in the literature on presuppositions is their “projection behavior” (cf. Karttunen 1973; Heim 1983; van der Sandt 1992). This topic concerns the question of whether presuppositions that are associated with expressions in embedded clauses are “inherited” by the embedding clause. This question is connected to the observation that certain logical operators that cancel logical entailments do not affect the content of presuppositions that are triggered by material in their scope. Entailments are cancelled e.g. under sentential negation, in the antecedent of a conditional, in questions, and in the scope of an epistemic modal. Compare the examples in (71) with those in (72).<sup>34</sup>

- (71) a. *Peter doesn't smoke.*  $\nrightarrow$  *Peter smokes.*  
 b. *If Peter smokes, he does so secretly.*  $\nrightarrow$  *Peter smokes.*  
 c. *Does Peter smoke?*  $\nrightarrow$  *Peter smokes.*  
 d. *Peter might smoke.*  $\nrightarrow$  *Peter smokes.*

- (72) *Peter stopped smoking.*  
 a. *Peter did not stop smoking.*  $\rightsquigarrow$  *Peter smoked.*  
 b. *If Peter stopped smoking, he feels more healthy now.*  $\rightsquigarrow$  *Peter smoked.*  
 c. *Did Peter stop smoking?*  $\rightsquigarrow$  *Peter smoked.*  
 d. *Peter might have stopped smoking.*  $\rightsquigarrow$  *Peter smoked.*

Projection is not possible from under all logical operators, however. Karttunen (1973)

<sup>33</sup>In (70), another presupposition that may be associated with *too* is that the referent of *he*, i.e. the speaker's younger brother, also played another type of sports besides volleyball.

<sup>34</sup>The type of sentences in (72) is usually used to test for an interaction with logical operators. This is called the “family of sentences test”: place the relevant expression in these environments, and check whether the content contributed by the expression “survives” the embedding, or not. This test is based on the observations in Karttunen (1973).

observes that for some operators, e.g. attitude verbs, the presupposed content is trapped in the operator's scope. This is illustrated for the attitude verb *believe* in (73).

(73) *Sheila believes that Paul is Peter's brother. But Peter does not have a brother.*

In (73), the presupposition that is triggered by the noun phrase *Peter's brother*, i.e. that Peter has a brother, is caught in the scope of the verb *believe*, and is not presupposed by the entire utterance. In the primary, truth-conditional content, it is only stated that Sheila believes that this is the case. Therefore, the denial of Peter's having a brother in the second sentence is consistent with the content conveyed by the first sentence, and no oddness arises.

Since expressions like *believe* “keep” presuppositions in their scope, Karttunen calls these expressions “presupposition plugs”. Plugs are contrasted with “holes” and “filters”. Holes are operators that always allow presupposed content to be projected, e.g. negation, modals, conditionals, and questions. Filters may allow or block projection depending on various linguistic and contextual factors. For a more detailed overview and a discussion of recent theories of presupposition projection see [Schlenker \(2008\)](#).

Let us now turn to the second type of additional content, i.e. implicatures. Implicatures are introduced in [Grice \(1975\)](#) as a very heterogeneous class of pragmatically inferred content. Grice distinguishes two major types of implicatures: (i) conversational implicatures and (ii) conventional implicatures. Conversational implicatures are “calculated” from the truth-conditional content of a sentence and the context in which it was uttered. The calculation is guided by the “Co-operative Principle” and four classes of associated “Conversational Maxims” that speakers seem to adhere to in order to ensure communicative success.<sup>35</sup>

(74) Co-operative Principle:

Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged.

([Grice 1975:45](#))

The Conversational Maxims are secondary to the Co-operative Principle, and constitute specific desiderata for a speaker's conversational contribution ([Grice 1975:45f](#)).

- Maxims of Quantity:

- Make your contribution as informative as is required (for the current purposes of the exchange).
- Do not make your contribution more informative than is required.

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<sup>35</sup>[Grice \(1975\)](#) does not see the Co-operative Principle and the Conversational Maxims as rules or norms that need to be obeyed by the discourse participants. He argues that the principle and the maxims are descriptive generalizations that reflect the usual, natural behavior of discourse participants.

- Maxims of Quality: Try to make your contribution one that is true.
  - Do not say what you believe to be false.
  - Do not say that for which you lack adequate evidence.
- Maxim of Relation: Be relevant.
- Maxims of Manner: Be perspicuous.
  - Avoid obscurity of expression.
  - Avoid ambiguity.
  - Be brief (avoid unnecessary prolixity).
  - Be orderly.

Conversational implicatures may arise in different communicative settings. One prominent setting is given when a speaker violates one or more of the Conversational Maxims but observes the Co-operative Principle. Example (75) illustrates a metaphor; the non-literal meaning that is understood is a conversational implicature. The meaning that A wants to convey with (75) is that the addressee B plays a special role in the A's life.

(75) A to B: *You are the cream in my coffee.*

The conversational implicature arises from A's violation of the Maxim of Quality. This maxim states that a co-operative speaker should only say what he believes to be true. It can be assumed that A does not believe that B, literally, is the cream in his coffee. Hence, given the assumption that A is co-operative, it can be concluded that A means something other than the literal meaning of (75). The intended meaning is inferred in analogy to the relation between cream and coffee as it is usually perceived in general and by the speaker.

As illustrated by (75), the content of conversational implicatures depends on the truth-conditional content of the sentence that was uttered, the context of utterance, and extra-linguistic knowledge, i.e. world knowledge.

Grice (1975) contrasts the class of conversational implicatures with the class of conventional implicatures, which involves pragmatically conveyed content that is part of the conventional meaning of specific words. Words of this kind are called "triggers". In addition to the conventional implicature, triggers may also contribute content to the truth-conditions of the sentence that contains them. Triggers that are traditionally discussed are *therefore* and *but*. Consider examples (76-a) and (76-b).

- (76) a. *He is an Englishman; he is, therefore, brave.*  
       (based on Grice 1975:44)
- b. *Peter writes his dissertation, but he is not sleep-deprived.*

The conventional implicature triggered by *therefore* in (76-a) is that being an Englishman is the reason for why the referent is considered to be brave. The content contributed by *therefore* to the two clauses is conjunction. The connective *but* is analyzed similarly as triggering the conventional implicature that the two sentences are linked by a causal relation. For (76-b), it is conveyed that writing a dissertation usually causes sleep deprivation. The contribution of *but* to the truth-conditions of a sentence is again conjunction.<sup>36</sup>

Conventional implicatures contrast with conversational implicatures in that they are triggered conventionally by specific expressions, and do not depend on the specific utterance context and world knowledge.

In early works on content that is conveyed in addition to the truth-conditional content of an utterance, presuppositions and conventional implicatures were usually not distinguished (cf. e.g. Karttunen and Peters 1979). One reason for this conflation was that presuppositions and conventional implicatures share the properties of being “non-detachable” and “conventional”.

(77) Detachability:

Non-primary content is detachable iff it is not preserved when the expressions that serve to trigger it in the associated sentence are substituted by other truth-conditionally equivalent expressions.

(78) Conventionality:

Non-primary content is conventional iff it is part of the conventional, lexical meaning of the expression that serves to trigger it.

However, presuppositions and conventional implicatures also have properties that distinguished them from each other: (i) their behavior regarding “cancelability”<sup>37</sup> and (ii) the connection their content has to the truth-conditional content of the associated sentence.

Regarding “cancelability” it was stated above that presuppositions may project from under some classes of logical operators, but are caught in the scope of others. In the latter case, the presupposed content that is triggered seems to be “lost” since it is not a presupposition of the entire utterance. So, in case the presupposition does not project,

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<sup>36</sup>Grice’s brief characterization of conventional implicatures has since then been used to account for a diverse class of lexical items and linguistic phenomena (cf. Potts 2005).

- Lexical items that are analyzed as triggering conventional implicatures are e.g. *but*, *therefore*, *still*, *even*, *only*, *too*, *already*, and *yet*.
- Complex linguistic expressions that are said to trigger conventional implicatures are honorifics, parentheticals and appositions, evidential morphemes, and discourse particles.

<sup>37</sup>This term is put in scare quotes since at least for presuppositions it is not an uncontroversial assumption that they are cancelled if they do not project. Compare the views in Karttunen (1973) and Gazdar (1979).

one could say that it was “canceled”. For instance, a presupposition may be blocked from projecting by explicitly denying its content. This is illustrated in (79).

- (79) A: *Did Peter stop smoking?*  
 B: *No, in fact he never smoked.*

The change of state verb *stop* in A’s question triggers the presupposition that Peter smoked in the past. This presupposition is “canceled” in B’s answer by B’s explicit denial that Peter smoked at some point in the past.

Conventional implicatures, in turn, cannot be “canceled”, i.e. they always seem to project from under any type of logical operator. Consider example (80).

- (80) *Peter is an Englishman and therefore brave. # But that he is an Englishman is actually not the reason.*

In the second sentence of (80), the speaker explicitly denies the content of the conventional implicature, i.e. that Peter’s being English is the reason for his being brave. The fact that this explicit denial results in pragmatic oddness suggests that the conventionally implicated content cannot be cancelled in this way. A more elaborate comparison shows that none of the contexts in which presuppositions do not project have an effect on conventional implicatures (cf. Potts 2005). Consider also (81).

- (81) *Sheila believes that Chuck, a confirmed psychopath, should be locked up. #But Chuck isn’t a confirmed psychopath.*  
 (Potts 2005:117)

In (81), the appositive *a confirmed psychopath* triggers the conventional implicature that Chuck is a confirmed psychopath. This content projects from under *believe* which is known to block the projection for presuppositions (cf. Karttunen 1973). Consequently, it is assumed to hold in the context of utterance. Hence, the denial in the second sentence is inconsistent with the content conveyed by the first sentence.

The second point in which presuppositions and conventional implicatures differ is whether the truth of the associated sentence depends on the truth of the pragmatically inferred content. For presuppositions, this is the case.

- (82) *The king of France sleeps.*

If the content of a presupposition is false, i.e. if there is “presupposition failure”, the semantic view on presuppositions assumes that the sentence that contains the trigger cannot be evaluated with respect to its truth-value. On the pragmatic view, the associated sentence cannot be evaluated in the given Common Ground.

In contrast, for conventional implicatures, truth of the conveyed content in the utterance context is not a necessary condition for the evaluation of the associated sentence

with respect to truth/falsity. For instance, irrespective of the truth or falsity of the conventional implicature in (80), the speaker can state truthfully that Peter is an Englishman and brave.

This difference between presuppositions and conventional implicatures and their interaction is also illustrated by the following sentence pair.

- (83) a. *The king of France, François Hollande, wears glasses.*  
 b. *François Hollande, the king of France, wears glasses.*

In example (83-a), the presupposition trigger *the king of France* is part of the matrix clause. Therefore, the truth of the sentence depends on the unique existence of a king of France. In (83-b), the same presupposition trigger appears in an apposition. Since the content of appositions is analyzed as a conventional implicature, the presupposition trigger, *the king of France*, is not part of the truth-conditional content of the asserted, primary content that François Hollande wears glasses, but part of the conventionally implicated content that François Hollande is the king of France. Consequently, no dependence between the existence of a unique king of France and the truth of the primary content can be observed. Note, however, that the truth of the conventionally implicated content in (83-b) depends on the presupposition triggered by the definite description.

In sum, two types of meaning need to be distinguished that may be conveyed in addition to the primary, truth-conditional content of an utterance: presuppositions and implicatures. In the class of implicatures, conversational implicatures need to be distinguished from conventional implicatures: Conversational implicatures are inferred on the basis of the truth-conditions of the entire associated sentence, the utterance context, and world knowledge. In contrast, conventional implicatures pattern with presuppositions in that they are part of the conventional meaning of the lexical items and syntactically complex expressions that trigger them. Presuppositions and conventional implicatures are distinguished, however, by their influence on the truth-evaluability of the associated sentence, and their projection behavior.

Which of these forms of additionally conveyed content is relevant to the discussion of the speaker- and participant-oriented content can already be narrowed down based on the data discussion in Section 1.4 and the discussion of Moltmann's observations in Section 4.3. The results of these sections support the conclusion that the pragmatic effects of impersonally used pronouns are directly connected to the specific lexical items, i.e. that the speaker-oriented and the participant-oriented content is part of the lexical meaning of these items. Hence, this content is either presupposed or conventionally implicated. The exact classification of the content that is conveyed is determined in Section 4.5.

In the following section, I review more recent discussions on additionally conveyed

content under the label “not-at-issue content”. This cover term includes both presuppositions and conventional implicatures as specific subclasses.

#### 4.4.2 Recent work on “not-at-issue content”

In recent semantic and pragmatic investigations, the strict differentiation of presuppositions and conventional implicatures and their connection to primary asserted content are reconsidered. The aim at the heart of this work is twofold: The first goal is to find a strict criterion to define what it means for information to be communicated as primary or additional content. The second goal is to develop classification criteria to distinguish different sub-classes of additional content that is conventionally communicated either by a lexical item or by a syntactically complex expression.

The source of the recent increase in interest in this line of investigation is usually considered to be Potts (2005). Potts investigates the class of conventional implicatures in detail from a syntax-semantic interface perspective. Potts adopts Grice’s view that conventional implicatures constitute a proper class of content, i.e. “CI content”. CI content is conveyed in addition to the primary content of a sentence, and is triggered conventionally. By uttering a statement with CI content, the speaker commits herself to the truth of the truth-conditional content, i.e. the “at-issue” content, as well as the truth of the CI content.<sup>38</sup>

Potts distinguishes two types of CI content triggers: (i) supplements, i.e. appositives and parentheticals, and (ii) expressives. See (84) and (85).

(84) *Ames, who stole from the FBI, is now behind bars.* (appositive)  
 CI content: Ames stole from the FBI.  
 (Potts 2005:13)

(85) *Sue’s dog is really **fucking** mean.* (expressive)  
 CI content: The speaker has heightened emotions with respect to the degree of meanness of Sue’s dog.  
 (Potts 2005:170)

Potts (2005) observes that if content has been introduced into a discourse, reintroducing the content as a CI is perceived as pragmatically odd. Potts calls this the “antibackgrounding effect”. Example (86) illustrates that repeating asserted content as part of CI content is odd. In contrast, repeating it as a presupposition is pragmatically felicitous.

<sup>38</sup>At-issue content in the sense of Potts (2005) is comparable with “proffered content” in Roberts (1996). It can also be equated with the truth-conditional content of the sentence that contains the lexical item that triggers the conventional implicature as adopted above.

- (86) *Lance Armstrong survived cancer.*
- a. # *When reporters interview Lance, a cancer survivor, he often talks about the disease.*
  - b. *And most riders know that Lance Armstrong is a cancer survivor.*
- (Potts 2005:112)

In addition to the antibackgrounding effect, Potts emphasizes the different projection behavior of CI content and presupposed content (cf. Section 4.4.1). He claims that CI content is effectively “scopeless”. That is, it seems to be the case that CI content can project from under any logical operator that is part of the at-issue content.<sup>39</sup>

A property that distinguishes CI content from at-issue content is its lack of direct deniability.

- (87)
- a. A: *Ames, who stole from the FBI, is now behind bars.*
  - b. B: *No, that’s wrong.*
  - c. B’: *No, Ames never stole from the FBI.*

For instance, B’s denial in (87-b) can only be with regards to the at-issue content of A’s utterance in (87-a) that Ames is behind bars at the time of utterance. If B wanted to deny that Ames stole from the FBI, B would have to do it explicitly as in (87-c).

Based on these observations, Potts proposes a two-dimensional formal system to account for the logical independence of the CI content from the at-issue content. He introduces a typed language  $\mathcal{L}_{CI}$  which encodes the difference between at-issue content and CI content by providing two sets of types.<sup>40</sup>

- (88)
- a. Basic at-issue types:  $e^a$ ,  $t^a$ , and  $s^a$
  - b. Basic CI types:  $e^c$ ,  $t^c$ , and  $s^c$
  - c. Functional types  $\langle \sigma, \tau \rangle$  and product types  $\langle \sigma \times \tau \rangle$  are defined inductively from the basic types.<sup>41</sup>

The language  $\mathcal{L}_{CI}$  does not interpret the tree structures provided by the syntax directly. On the basis of syntactic input structures, semantic parsetrees are first generated in

<sup>39</sup>This generalization is first stated in this manner in Amaral et al. (2007) on the basis of Potts’s claims. Amaral et al., however, contest this view. They argue that in speech reports expressives may either be associated with the reported speaker or with the actual speaker uttering the speech report. Potts, however, contests this counterexample. For a discussion see Potts (2012).

<sup>40</sup>The introduction of two incompatible sets of types means that no expression may contribute both to the at-issue content and the CI content. This has been challenged by various researchers. For instance, Horn (2011) gives the following example.

- (i)
- a. *You shouldn’t vote for that bastard Jones.*
  - b. *You shouldn’t vote for that bastard.*
- (Horn 2011:5)

<sup>41</sup>A product type  $\langle \sigma \times \tau \rangle$  encodes a set of ordered pairs of expressions of type  $\sigma$  and  $\tau$ .

a type-driven manner. The resulting parsetrees are then interpreted by  $\mathcal{L}_{CI}$ . In these parsetrees, expressions with at-issue types and expressions with CI types inhabit different “dimensions”. The dimensions are graphically delimited by a bullet: •. The interpretation of a sentence via such a parsetree results in an ordered pair consisting of the interpretation of the at-issue content and the interpretation of the set of CI contents at the root of the derived parsetree.

Consider Potts’s treatment of the expression *Lance, a cyclist*. First, the following parsetree structure is derived.

$$(89) \quad \begin{array}{c} \text{Lance:}e^a \bullet \text{cyclist(Lance):}t^c \\ \diagdown \quad \diagup \\ \text{Lance:}e^a \quad \text{comma(cyclist):}\langle e^a, t^c \rangle \\ \quad \quad \quad | \\ \quad \quad \quad \text{cyclist:}\langle e^a, t^a \rangle \end{array}$$

A featural<sup>42</sup> COMMA-operator is defined which shifts the at-issue predicate *cyclist* to the CI content *comma(cyclist)*. The CI content that is then combined with the proper name *Lance* to derive the CI content ‘Lance is a cyclist’. The at-issue content of the expression is the individual denoted by *Lance*. In a next step, the parsetree in (89) is interpreted as the tuple in (90).

$$(90) \quad \langle \llbracket \text{Lance} : e^a \rrbracket, \{ \llbracket \text{cyclist(Lance)} : t^c \rrbracket \} \rangle$$

For reasons of space, I will not go into greater detail regarding Potts’s system at this point. For a detailed discussion of the formal system, see Potts (2005). The crucial point for the purposes of this thesis is the idea that at-issue content and not-at-issue content are part of two different dimensions of meaning.

The depth of the data discussion, as well as the two-dimensional formal account in Potts (2005) is reviewed, and criticized in Amaral et al. (2007). Their main point of criticism is that Potts designs an elaborate syntax-semantics interface for CI content, but ignores its pragmatic aspects. They argue that an adequate theory of CI content has to take into account its pragmatic properties. They also criticize (i) that Potts never formally defines the notion of at-issueness, and (ii) that his system cannot account for possible interactions between CI content and at-issue content.

As a possible remedy to the first point, Amaral et al. define at-issueness based on relevance for the question under discussion (QUD) in the sense of Roberts (1996). The

<sup>42</sup>The COMMA-operator is “featural” in that it is contributed by a feature which is part of the syntactic label of the constituent that has to be interpreted on the dimension of CI content. Cf. Potts (2005).

QUD is the current open question that was either explicitly or implicitly asked in the previous discourse, and which corresponds to the current discourse topic.<sup>43</sup> See (91)

- (91) The felicity of an utterance necessitates that its at-issue content be relevant to the question under discussion.  
(Amaral et al. 2007:732)

Relevance to the QUD is defined as partial answerhood:

- (92) In order to be relevant to the question under discussion, an utterance must contextually entail at least a partial answer to that question.  
(Amaral et al. 2007:732)

CI content is one type of content that is not at-issue.

To support their criticism of the strict independence of at-issue content and CI content at the heart of Potts' formal system, Amaral et al. present data that suggests that the two types of content sometimes interact. For instance, anaphoric pronouns of various kinds may occur in CI content for which the antecedent is part of the at-issue content, or *vice versa*. This is illustrated in (93).

- (93) a. *Stan Bronowski, who took an exam, passed it with flying colors.*  
b. *Several students, most of them linguists, missed the bus.*  
(Amaral et al. 2007:740)

They suggest that Potts' characterization of CI content as logically entirely independent from at-issue content is not adequate. Instead, the defining property of CI content is that it comments in one way or another on (i) the at-issue content, e.g. for expressives and supplements, (ii) the speech act, e.g. for utterance-modifiers, or (iii) the speech situation connected to the syntactic complement of a lexical element triggering a conventional implicature, e.g. for honorifics. From this point of view, Amaral et al. conclude, a two-dimensional account which completely separates the at-issue content from the CI content is not motivated. They suggest that CI content simply has a special status compared to at-issue content with respect to its relevance for the QUD.

The connection between not-at-issue content and relevance to the QUD is explored further in Roberts et al. (2009), Simons et al. (2011), and subsequent work. The central idea is that presuppositions, CI content, and possibly other types of pragmatic content constitute special cases of a more general phenomenon: "projective content".

- (94) *Definition of projection:*  
An implication projects if and only if it survives as an utterance implication

<sup>43</sup>Here, "topic" is understood differently from the notion of "topic" in the literature on information structure, cf. Roberts (2011b).

when the expression that triggers the implication occurs under the syntactic scope of an entailment-cancelling operator.

(Simons et al. 2011:309)

Simons et al. (2011) show that formal systems that are proposed to account specifically for either presuppositions (cf. Heim 1983; van der Sandt 1992) or for conventional implicatures (cf. Potts 2005) cannot be extended to account for the entire range of projective meaning since these accounts try to build all of the properties of presupposed or conventionally implicated content into their systems. But, as shown above, presuppositions and conventional implicatures differ from each other e.g. with respect to their interaction with at-issue content.

To account for the common properties of all classes of projective content, Simons et al. (2011) propose that these classes share the same pragmatic property, i.e. not-at-issueness. Based on the results in Roberts (1996), at-issueness is defined in Simons et al. (2011) as in (95).

- (95) Revised definition of at-issueness:
- a. A proposition  $p$  is at-issue iff the speaker intends to address the QUD via  $?p$ .
  - b. An intention to address the QUD via  $?p$  is felicitous only if:
    - (i)  $?p$  is relevant to the QUD<sup>44</sup> (cf. (92))
    - (ii) the speaker can reasonably expect the addressee to recognize this intention.

(Simons et al. 2011:323)

As suggested for CI content in Amaral et al. (2007), not-at-issueness is defined negatively as holding for linguistic material that does not meet the criteria in (95). The content that is contributed by this material is said to be “projective”. An attractive feature of this definition is based on the notion of at-issueness. It provides a unified characterization of the pragmatic behavior of projective content: any content that is not relevant to the current QUD is expected to be independent of logical operators that are part of the at-issue content. Hence, the account covers presuppositions, conventional implicatures, and other projective content which cannot be easily classified as either. See for instance e.g. the prejacent of *only*.<sup>45</sup>

On the basis of Simons et al. (2011), Roberts (2011a) and Tonhauser (2011) give three sets of diagnostic tests for (not-)at-issueness. These tests are based on the observations

<sup>44</sup>The definition given in Simons et al. (2011) is: A question is relevant to a QUD iff it has an answer which contextually entails a partial or complete answer to the QUD (Simons et al. 2011:316).

<sup>45</sup>Simons et al. (2011) already note, however, that connecting at-issueness to a purely pragmatic notion, i.e. the QUD, does not take into account the link of presuppositions and conventional implicatures to the conventional meaning of their triggers. Or more generally, the account does not capture that linguistic form is a strong indicator of the at-issueness status of contributed content.

(i) that only at-issue content can be directly assented to/dissented from, (ii) that only at-issue content addresses the QUD, and (iii) that for focus marking, only at-issue content is taken into account when the set of focus alternatives is determined.

Roberts (2011a) proposes two additional criteria to distinguish specific classes of not-at-issue content.

- (96) a. Influence on the contextual felicity of an utterance: Does the not-at-issue content place restrictions on the utterance context?  
 b. Local effect: Is the truth of the not-at-issue content locally entailed by the at-issue content?

Table 4.1 shows Roberts's results for three classes of not-at-issue content: (i) anaphoric presuppositions, (ii) speaker-oriented content, and (iii) backgrounded content. Anaphoric presuppositions are triggered by e.g. *too*, pronouns, demonstratives, various elliptical constructions, and definite descriptions. Speaker-anchored content is essentially CI content as described in Potts (2005), and backgrounded content is, for instance, contributed by the complements of change of state verbs, factive verbs.<sup>46</sup> Further criteria might provide a more fine grained classification.

	Contextual Felicity	Local Effect
Anaphoric presuppositions	yes	yes
Speaker-anchored content	no	no
Backgrounded content	no	yes

Table 4.1: Central classes of projective meaning in Roberts (2011a)

In sum, the recent literature on (not-)at-issue content provides a new point of view on presuppositions and conventional implicatures based on the central notion of projection. Presupposed content, on the one hand, and CI content as described in Potts (2005), on the other hand, can be subsumed in the general class of projective content. To distinguish types of projective content, and to give a more fine-grained classification of this class, additional criteria are proposed.

In the following section, I employ the tests described above to classify the content at the heart of the pragmatic effects of *ich*, *du*, and *man*. I argue that the speaker-oriented component, as well as the participant-oriented component of the three pronouns contribute projective content. Specifically, the content seems to behave like speaker-anchored content in the sense of Roberts (2011a) which can be equated with CI content as described in Potts (2005).

<sup>46</sup>For a detailed discussion of the classes see Roberts (2011a).

## 4.5 A new proposal for the impersonal uses of *ich*, *du*, and *man*

### 4.5.1 The pragmatic effects of German *ich*, *du*, and *man*

In this section, I propose a new account for the impersonal uses of *ich*, *du*, and *man*. The main goal for this account is to capture the pragmatic effects of these pronouns in a manner that is more adequate than in the account proposed in Section 2.5.3. This means that it avoids all of the problems that were identified for the old account in Section 4.2. As announced at the beginning of this chapter, this new account is not intended as a unified account for the referential and impersonal uses of *ich* and *du*. For the referential use, I adopt the directly referential treatment as proposed in Kaplan (1978 [1989]) repeated in (97).<sup>47</sup>

- (97) a.  $[[ich]]^{c,g} = c_S$   
 b.  $[[du]]^{c,g} = c_A$

Possible connections on different grammatical levels between the directly referential meaning of the referential uses and the meaning that is proposed for the impersonal uses in this section will be discussed in Section 4.6.

This section is structured as follows. First, the observations on the pragmatic effects from Section 1.4 are summarized. On the basis of this summary, I then determine which type of not-at-issue content fits the pragmatic components that are identified for *ich*, *du*, and *man*. The core of this section is an analysis of the content of the pragmatic components and their interactions. In the second part, I join together these results to give a new analysis of the meaning contributed by the impersonal uses of *ich*, *du*, and *man*.

Let us take a brief look at the main results of Section 1.4. In this section, the pragmatic effects of the impersonal uses of *ich*, *du*, and *man* were described. One of the observations that were made is that in this use, *ich*, *du*, and *man* share the same speaker-oriented content that is observed for the English impersonal pronoun *one* (cf. Section 4.3). In addition, the personal pronouns *ich* and *du* show participant-oriented effects; no corresponding effect is observed for the impersonal pronoun *man*.

The speaker-oriented effect of *ich*, *du*, and *man* is best observed in comparison with ordinary generic sentences. If impersonally used pronouns occur in generic sentences, the speaker intuitively conveys a personal point of view with respect to the generalization that is expressed. For English *one*, Moltmann argues that this observation points towards a hard-wired aspect in the meaning of the pronoun that conveys

<sup>47</sup>Alternatively, the account proposed in Nunberg (1993) in its original formulation or the account proposed in Kratzer (2009) may be adopted, as well.

speaker-orientation (cf. Section 4.3). Zifonun (2000) makes a similar observation for the speaker-orientation of German *man*. Her description of the speaker-connection exhibited by *man* is strikingly similar to Moltmann's proposal of the licensing strategies for *one*. Consider Zifonun's comment in (98-b).

- (98) “Especially significant on the pragmatic level is the use of *man* for which generalizability is intended. In this use, it is communicated:
- a. that the generalization that applies to all (relevant) individuals is also applicable to the speaker and
  - b. what the speaker experiences could be experienced in the same way by all other (relevant) individuals, as well.”
- (translated from Zifonun 2000:242)

Based on Moltmann's discussion, I suggest that the speaker-oriented content that is conveyed by impersonally used pronouns expresses that the speaker's actual or simulated beliefs are such that he does not, or would not exclude himself from the set of people to which the generalization applies. The effect of the speaker-oriented component of impersonally used *man* is illustrated in example (99).

**Scenario:** A knows that a new exhibition on Klimt opened featuring “The Kiss” in a prominent position across from the entrance. A, who is blind, tells a friend about the exhibition.

- (99) A: #*Man kann als Besucher das Bild vom Eingang aus sehen.*  
           one can as visitor the picture from-the entrance of see  
 A: ‘#As a visitor, one can see the picture from the entrance.’

The speaker-oriented component of the first sentence in (99) states that the speaker's beliefs are consistent with the speaker's actual or simulated beliefs about his being a visitor at that exhibition. The speaker knows that if he were to visit the exhibition, he would not be able to see the picture from the entrance because of his medical condition. This knowledge is in conflict with the speaker-oriented component of *man*. Hence, the sentence in (99) is judged as odd.<sup>48</sup>

The function of the second, participant-oriented content of *ich* and *du* involves the creation of distance or closeness between the speaker and other people, respectively.

When the speaker uses impersonally interpreted *ich*, he signals distance between himself and some other set of people, but not necessarily other discourse participants. Specifically, the speaker communicates that he has grounds to believe that the validity of the regularity expressed by his utterance, which he fully supports, may not be

<sup>48</sup>I thank Patrick Grosz (p.c.) for detailed discussions on this point.

supported, or adhered to by others.<sup>49</sup> Neither the complete support on the part of the speaker, nor the belief that someone does not accept the generalization can be explicitly retracted. This is illustrated in (100) and (101) for the scenario given below.

**Scenario:** A and B discuss obligations of farmers. B states that she knows a farmer who never milks his cows.

(100) A: *Ich muss doch als Bauer meine Kühe melken! #Aber eigentlich können Bauern meinetwegen machen, was sie wollen.*  
 I must PRT as farmer my cows milk but actually  
 can farmers for-all-I-care do what they want  
 A: ‘As a farmer, one has to milk one’s cows (and I support this fully)! # But for all I care, farmers can do what they want.’

(101) A: *Ich muss doch als Bauer meine Kühe melken! #Ich bin mir sicher, dass der Bauer, den du kennst, da mit mir einer Meinung ist.*  
 I must PRT as farmer my cows milk I am me sure  
 that the farmer who you know about-that with me the-same opinion  
 is  
 A: ‘As a farmer, one has to milk one’s cows (in contrast to the actions of that farmer)! # I am sure that the farmer you know agrees with me.’

When a speaker uses impersonally interpreted *du*, in contrast, he aims to create closeness or an informal camaraderie between himself and the addressee. Specifically, the function of the participant-oriented content is to invite the addressee to simulate the necessary experiences on the basis of the generalization in the sense of Moltmann (2006, 2010a), and to come to the same conclusion as the speaker with respect to the validity of the regularity that is expressed. In analogy to impersonally used *ich*, the invitation and the expectation that the addressee will share the speaker’s opinion cannot be retracted. This is illustrated in (102).

**Scenario:** A and B talk about the essential qualities that a childcare specialist is expected to have.

(102) A: *Als Erzieherin musst du auf jeden Fall gut mit Kindern umgehen können. #Aber du bist da sicher anderer Meinung.*  
 as childcare-specialist must you on every case good with children  
 interact can but you are there most-probably different opinion  
 A: ‘As a childcare specialist, you (imp.) have to interact well with children.  
 # But I am certain that you (add.) will have a different opinion about that.’

<sup>49</sup>The type of evidence cannot be strictly defined as in the case of evidentials (cf. e.g. Matthewson et al. 2007). As discussed in Chapter 1 for negative sentential contexts, the violation of the generalization can be as diverse as an explicit violation of the rule by some individual in the context, or the speaker’s belief that another individual may not share his views.

Since the impersonal pronouns *man* and *one* do not show any similar participant-oriented effects, this content has to be seen as independent from the speaker-oriented content.

To sum up, the following effects have to be accounted for for each of the pronouns:

- *man*: the speaker's actual or simulated beliefs are such that he does not, or would not exclude himself from the set of people to which the generalization applies
- *ich*:
  - the speaker's actual or simulated beliefs are such that he does not, or would not exclude himself from the set of people to which the generalization applies
  - the speaker communicates that he has grounds to believe that the validity of the regularity expressed by his utterance, which he fully supports, may not be supported, or adhered to by others
- *du*:
  - the speaker's actual or simulated beliefs are such that he does not, or would not exclude himself from the set of people to which the generalization applies
  - the speaker invites the addressee to simulate the necessary experiences, and to come to the same conclusion as the speaker with respect to the validity of the regularity expressed by the sentence

### 4.5.2 Speaker- and participant-orientation is CI content

As shown in Sections 2.6, 4.2, and 4.3, the pragmatic effects based on the speaker-orientation and the participant-orientation of *ich*, *du*, and *man* cannot be modeled as a restriction on the set of individuals for which the generalization is stated. As an alternative, I propose to analyze the speaker-orientation of *ich*, *du*, and *man* and the participant-oriented effects of *ich* and *du* as not-at-issue content (cf. Section 4.4). This means that the content of the two pragmatic meaning components needs to be treated as independent from the truth-conditional content of the three pronouns. In particular, both components seem to behave like speaker-anchored content in the sense of Roberts (2011a), i.e. CI content as described in Potts (2005). Roberts (2011a) summarizes the properties of this kind of not-at-issue content as follows.

- CI content is projective, i.e. it is scopeless with respect to logical operators.
- CI content places no constraints on the utterance context.
- The truth of CI content is not entailed by the at-issue content.

In the following discussion, I show that the the speaker-oriented content, as well as the participant-oriented content of impersonally used pronouns displays all the char-

acteristics of CI content.<sup>50</sup> For reasons of space, I only give examples of impersonally interpreted *ich*, but analogous examples for *du* and *man* could also be provided.

First, the sentences in (103-a) and (103-b) show that the speaker-oriented content and the participant-oriented content do not interact with logical operators such as sentential negation or conditionals.<sup>51</sup>

- (103) a. *Ich kann als Spieler nicht einfach nach Minneapolis wechseln!*  
 I can as player not simply to Minneapolis transfer  
 ‘A player can not simply transfer to Minneapolis!’<sup>52</sup>
- b. *Wenn ich als Gewerbetreibender etwas kaufe, kann ich*  
 if I as trader something buy can I  
*Vorsteuer geltend machen.*  
 prepaid-tax lay-a-claim  
 ‘If a trader buys something, he can lay a claim on prepaid tax.’<sup>53</sup>

In neither (103-a) nor (103-b), the speaker- or participant-oriented content is interpreted in the scope of sentential negation or as part of the *if*-clause, respectively. That is, example (103-a) cannot be used to deny that the speaker believes that the generalization ‘players can simply transfer to Minneapolis’ would apply to him if he were to play football. Neither can it be used to deny that the speaker believes the rule to be valid, or to deny that he has grounds to believe that his opinion is not universally shared. The sentential negation in example (103-a) can only be understood as denying a possibility for players in general, as given in the translation. The speaker-oriented content and participant-oriented content are conveyed independently from, and comment on this at-issue content. The argument for (103-b) works analogously. The speaker- and participant-oriented contents are not assumed hypothetically, but express a comment on the conditional generic statement in its entirety.

Second, the content of the speaker- and participant-oriented components cannot be affirmed or denied directly.

- (104) A: *Ich muss halt als “Allgemeinheit” bereit sein, mir meine*  
 I must PRT as community willing be me my  
*Infrastruktur auch etwas kosten zu lassen.*  
 infrastructure also something expense to let  
 ‘A community has to be willing to pay a certain price for its infrastructure.’<sup>54</sup>

<sup>50</sup>This discussion follows the discussion in Roberts (2011a) on the status of the preajcent of *only*.

<sup>51</sup>Examples (103-a) and (103-b) can be seen as the first and third sentence in the family of sentences test (cf. Section 4.4). Since the behavior of the impersonal uses of *ich* and *du* has not yet been investigated for other clause types apart from declaratives, the behavior of impersonally interpreted *ich* in an interrogative sentence is not considered.

<sup>52</sup>Adapted from <http://www.footballforum.de/community/brett-farve-der-naechste-versuch-t4671-s360.html>

<sup>53</sup><http://de.answers.yahoo.com/question/index?qid=20091023064023AADC6nz>

<sup>54</sup>[http://derstandard.at/plink/1226067142914?sap=2&\\_pid=11193953#pid11193953](http://derstandard.at/plink/1226067142914?sap=2&_pid=11193953#pid11193953)

B: *Ja, das stimmt. / Nein, das stimmt nicht.*  
 yes that is-right / no that is-right not  
 ‘Yes, that’s true. / No, that’s not true.’

In (104), B’s affirmation or denial can only be directed at the at-issue content of A’s utterance, i.e. the generalization about communities given in the translation. B can neither affirm nor deny the speaker- or the participant-oriented component in this way.

Third, both the speaker-oriented, as well as the participant-oriented component contribute new information. This means that they do not place a givenness constraint on the utterance context. Consider the dialogue in (105).

- (105) A: *Wenn ich als Mannschaft solche Spiele abliefere, dann zum Boss*  
 if I as team such matches deliver then to-the boss  
*gehen und mich ausheulen ist auch kein Niveau.*  
 go and me cry-one’s-eyes-out is also no standard  
 ‘If a team plays like that, it is low standard to go running to the boss  
 afterwards to cry their eyes out.’
- B: *Du würdest das also nicht machen.*  
 you would that PRT not do  
 ‘You wouldn’t do that, I gather.’
- B’: *Dich scheint das ja sehr aufzuregen!*  
 you seem that PRT very upset  
 ‘You seem very upset about that!’

In this dialogue, B comments directly on the speaker-oriented content contributed by impersonal *ich* in A’s utterance; B’ comments on the participant-oriented content of *ich* in A. Both B and B’ are direct reactions to the speaker- and the participant-related components of *ich*. Given the way in which B and B’ are formulated, this suggests that the addressee did not have prior knowledge of the additional content conveyed by A.

Lastly, the truth of the content of the speaker-oriented and the participant-oriented component is not entailed by the at-issue content. In generic sentences containing the impersonal uses of *ich*, *du*, and *man*, no lexical material occurs which can operate on the content of the two components. Compare the examples in (103) to (106), which contains a factive verb.

- (106) *Peter weiß dass Maria Paul mag.*  
 Peter knows that Maria Paul likes  
 ‘Peter knows that Maria likes Paul.’

The content of the presupposition triggered by *wissen* (Engl. ‘know’) is also contributed locally as the content of Peter’s knowledge. In contrast, the speaker and participant-oriented content is part of the pronouns conventional meaning, and is never explicitly spelled out by material in the sentence. This rules out that the components contribute backgrounded content (cf. Section 4.4.2).

The observation that the content of the speaker-oriented and participant-oriented components in many cases contributes hearer-new information makes a classification as presuppositions implausible. However, presupposed content that has not been previously established, can in some cases be tacitly accommodated. Hence, the observation that the components sometimes contribute hearer-new content is not a particularly strong argument against their being presupposition triggers. It, however, lends support to the results of the following two arguments against this content being presupposed.

First, the speaker may use any of the three pronouns pretending that the content of the pragmatic components holds. If it turns out afterwards that what the speaker conveyed by using the specific pronominal form is false, e.g. that she has no grounds to believe that someone disagrees with the content of the generalization, the truth of the generalization is not affected. For presuppositions, the falsity of their content always has an effect on the truth-evaluability/the integration of the at-issue content.

Second, the effect of the two components cannot be explicitly denied. As shown above in (99), (100), (101), and (102), any attempt results in pragmatic oddness, .

Given these results, it can be concluded that in the coarse-grained classification of not-at-issue content discussed in Roberts (2011a), both components contribute speaker-anchored content, i.e. CI content.

This result is further supported by the observation that both components also show the *traditional* properties of Gricean conventional implicatures: they cannot be “canceled”, and do not have an influence on the truth of the at-issue content. They are also detachable and conventional since (i) a switch to another (pro)nominal expression results in the loss of the specific combination of implicated content, and (ii) the content of the pragmatic effects does not depend on the context of utterance or on world knowledge.

Nevertheless, a more fine-grained analysis of the two components might provide a more differentiated picture. One difference between appositives and expressives—the traditional CI triggers—in comparison to the speaker- and participant-oriented components is that appositives and expressives make their content explicit in the linguistic form. A detailed comparison is needed to provide new insights into the landscape of not-at-issue content; this comparison is left for further investigation, though.

### 4.5.3 Formalizing the speaker- and participant-oriented content

I now turn to a formal analysis of the content contributed by the speaker-oriented and participant-oriented components. Note that the following proposal needs to be seen as a first approximation of the content contributed by these components. Further

investigations of the behavior of the impersonal readings in their contexts of use are required to spell out the contribution of these components in full detail.

To start out, I first want to propose a general principle regarding utterances by a speaker. By uttering a sentence  $S$  with the at-issue content  $\llbracket S \rrbracket^{g,c} = p$ , the speaker  $c_S$  also communicates the content in (107).

$$(107) \quad \lambda w. \text{BELIEVE}_w(c_S, p)$$

This principle is based on a proposal by Kaufmann given in (108).<sup>55</sup>

$$(108) \quad \textit{Principle of truthful propositions:}$$

“A speaker who expresses a proposition is taken to believe it unless this is prevented by explicit marking (e.g. rising intonation, particles, etc.)”

(Kaufmann 2012:152f)

The operator  $\text{BELIEVE}_w$  in (107) expresses universal quantification over the set of worlds that are doxastically accessible from  $w$  relative to the respective attitude holder denoted by the first argument of  $\text{BELIEVE}_w$  (cf. Hintikka 1962). Given this assumption, (107) is equivalent to (109).

$$(109) \quad \lambda w. \forall w' \in \text{Dox}_{c_S, w}[p(w')]$$

For a sentence of the form ‘PRON *als*  $F$  is  $G$ ’, with  $\text{PRON} \in \{\textit{ich}, \textit{du}, \textit{man}\}$ , the belief in (107)/(109) can be alternatively specified as in (111). This alternative specification is based on the adapted version of Drewery’s (1998) modal account for generic sentences proposed in Section 3.3.3, repeated in (110).<sup>56</sup>

$$(110) \quad \forall w'[w \sim_{F,G} w' \rightarrow \forall x[F(x)(w') \ \& \ N_{F,G}(w')(\langle x, w' \rangle) \rightarrow G(x)(w')]]$$

$$(111) \quad \lambda w. \text{BELIEVE}_w(c_S, \lambda w. \forall w'[w \sim_{F,G} w' \rightarrow \forall x[F(x)(w') \ \& \ N_{F,G}(w')(\langle x, w' \rangle) \rightarrow G(x)(w')]])$$

If  $F$  is not specified, i.e. if no *als*-phrase occurs in the sentence, I assume that the default value for  $F$  is the property of being an animate individual (cf. Section 1.2).

Crucially, (111) is not part of the speaker- and/or participant-related effects of *ich*, *du*, and *man*, but an independent assumption about utterances in general.

For the speaker-oriented component, I argue that the CI content that is expressed

<sup>55</sup>A similar connection between the speaker’s belief and his utterances is stated as part of the definition of what it means to assert a sentence in Condoravdi and Lauer (2011).

(i) An assertion of a declarative  $\phi$  in context  $C$  adds  $\llbracket \phi \rrbracket_C$  to the public beliefs of the speaker, thereby publicly committing the speaker to act as though he believes  $\llbracket \phi \rrbracket_C$ . (Condoravdi and Lauer 2011:8)

<sup>56</sup>I abstract away from any overt modal that may occur in  $G$ .

conveys exactly the intuitions regarding the speaker-orientation described in Moltmann (2010b) and Zifonun (2000). These intuitions were specified in the previous subsection as: “The speaker’s actual or simulated experiences and beliefs are such that he does not, or would not, exclude himself from the set of people to which the generalization applies.” Given the semantics for sentences of the form ‘PRON *als F is G*’ in (110), the CI content of the speaker-oriented component can be reformulated as: “The speaker believes that he is a non-exceptional *F* with respect to being *G* if he is an *F*, or that he would be a non-exceptional *F* with respect to being *G* if he were an *F*.” By adopting Drewery’s notation  $N_{F,G}$  for non-exceptional *F*-individuals with respect to being *G*, this can be expressed as in (112).

$$(112) \quad \text{Speaker-oriented component:} \\ \lambda w.[F(c_S)(w) \rightarrow \text{BELIEVE}_w(c_S, \lambda w.N_{F,G}(w)(\langle c_S, w \rangle))] \& [\neg F(c_S)(w) \rightarrow \\ \text{BELIEVE}_w(c_S, \lambda w.\forall w' \in \text{MaxSim}_{F(c_S),w}[N_{F,G}(w')(\langle c_S, w \rangle))]]$$

The set of accessible worlds  $\text{MaxSim}_{p,w}$  used to model the counterfactual assumption by the speaker is the set of worlds that are maximally *p*-similar to *w*. This is a crude approximation of Kratzer’s analysis of counterfactual sentences (cf. Kratzer 1981b, 1989, 2005). Also note that I assume that the speaker knows whether he is an *F* or not.<sup>57</sup>

A first, reassuring result of this proposal is that in conjunction, the beliefs in (111) and (112) capture the observations in Moltmann’s and Zifonun’s work: the speaker’s beliefs and experiences support the truth of the generalization.<sup>58</sup> It can be shown that (i) if the speaker is an *F* in the world of evaluation, he believes that he is a *G*, and (ii) if the speaker is not an *F* in the world of evaluation, he believes that if he were an *F*, he would be a *G*. That is, the speaker believes that the generalization applies, or may apply to himself.

*Proof.* The proof of this result involves two cases.

In the first case, the speaker is an *F* in the world of evaluation *w*, i.e.  $F(c_S)(w)$ . By this assumption and (112), it follows that

$$(113) \quad \forall w' \in \text{Dox}_{c_S,w}[N_{F,G}(w')(\langle c_S, w \rangle)]$$

By (111), the set of doxastically accessible worlds is a subset of the worlds in which the generic sentence holds. By the assumption of the analysis of  $\text{BELIEVE}_w$  in (109), this means that

<sup>57</sup>The case that the speaker might falsely believe that he is *F* or that he is  $\neg F$  is not taken into account by the formalization. A detailed investigation of the effect of false belief is beyond the scope of this thesis and needs to be left for further research.

<sup>58</sup>I take experiences to also add propositions to the set of beliefs of the experiencer.

$$(114) \quad \forall w' \in \text{Dox}_{c_S, w} \forall w'' [w'' \sim_{F, G} w' \rightarrow \\ \forall x [F(x)(w'') \ \& \ N_{F, G}(w'')(\langle x, w'' \rangle) \rightarrow G(x)(w'')]]$$

Since  $\sim_{F, G}$  is reflexive (cf. Section 3.3.3), the consequent of the first material implication holds in all doxastically accessible worlds:

$$(115) \quad \forall w' \in \text{Dox}_{c_S, w} \forall x [F(x)(w') \ \& \ N_{F, G}(w')(\langle x, w' \rangle) \rightarrow G(x)(w')]$$

From the starting assumption (113) and (115), it follows that

$$(116) \quad \forall w' \in \text{Dox}_{c_S, w} [G(c_S)(w')].$$

In the second case, the speaker is not an  $F$  in the world of evaluation  $w$ , i.e.  $\neg F(c_S)(w)$ . By this assumption and (112),

$$(117) \quad \forall w' \in \text{Dox}_{c_S, w} \forall w'' \in \text{MaxSim}_{F(c_S), w'} [N_{F, G}(w'')(\langle c_S, w'' \rangle)]$$

By (111), the set of doxastically accessible worlds is a subset of the worlds in which the generic sentence holds. This means that

$$(118) \quad \forall w' \in \text{Dox}_{c_S, w} \forall w'' [w' \sim_{F, G} w'' \rightarrow \\ \forall x [F(x)(w'') \ \& \ N_{F, G}(w'')(\langle x, w'' \rangle) \rightarrow G(x)(w'')]]$$

I assume that the maximally similar worlds to the doxastically accessible worlds  $w'$  with respect to  $c_S$  being  $F$  are those worlds  $w''$  in which, everything else being equal, the speaker  $c_S$  is an  $F$ . Since the speaker's being an  $F$  in a world  $w'$  has no influence on the rules and generalizations that hold in that world regarding  $F$ s, it can be assumed that the maximally similar worlds to the doxastically accessible worlds agree on these rules. This means that the maximally similar worlds are also generically accessible from any  $w' \in \text{Dox}_{c_S, w}$ .

$$(119) \quad \forall w' \in \text{Dox}_{c_S, w} \forall w'' \in \text{MaxSim}_{F(c_S), w'} [w' \sim_{F, G} w'']$$

By the reflexivity of  $\sim_{F, G}$ , the quantified consequent of the first material implication holds in all of the worlds that are maximally similar to the doxastically accessible worlds.

$$(120) \quad \forall w' \in \text{Dox}_{c_S, w} \forall w'' \in \text{MaxSim}_{F(c_S), w'} \forall x [F(x)(w'') \ \& \\ N_{F, G}(w'')(\langle x, w'' \rangle) \rightarrow G(x)(w'')]$$

From (117), and (120), it follows that

$$(121) \quad \forall w' \in \text{Dox}_{c_S, w} \forall w'' \in \text{MaxSim}_{F(c_S), w'} [G(c_S)(w'')].$$

□

The additional participant oriented content of *ich* and *du* has two parts. The first

part is shared by both pronouns and states that the speaker believes that the validity of the generalization which he expresses is “uncontroversial”. I model this belief as follows.<sup>59</sup>

- (122) Participant-oriented component for *ich* and *du* - part I:  
 $\lambda w. \text{BELIEVE}_w(c_S, \text{all individuals that consider } ?p \text{ should accept that } p)$   
 where  $?p$  is the question whether or not the proposition  $p$  holds

The analysis in (122) contains two parts that need to be further analyzed: (i) what it means to consider  $?p$ , and (ii) what it means to accept  $p$ . For the course of this discussion, I take “to consider  $?p$ ” to mean “to try to decide whether  $p$  holds in the world of evaluation”. Regarding the second question, there are intuitively two ways to accept a generic statement as valid: the first is induction over individuals and the second is being told of the existence of a rule by an authority (cf. Carlson 1995).<sup>60</sup> I assume that acceptance of the generic sentences containing an impersonally used pronoun involves one of these, and possibly both, options. A third option may be to check the generalization against one’s own beliefs and experiences, as proposed by Moltmann (2006, 2010a). I will not go into further detail at this moment; a more in-depth investigation is left for further research since it is beyond the scope of this thesis.

The second part of the participant-oriented component differs for *ich* and *du*. Impersonally interpreted *ich* conveys that the speaker believes that his belief that  $p$  is not universally shared.

- (123) Participant-oriented content for *ich* - part II:  
 $\lambda w. \text{BELIEVE}_w(c_S, \text{there is a specific individual that does not accept that } p)$

The speaker’s belief may be the result of direct or indirect “evidence” given the behavior of a specific individual, as discussed above.

In combination, (122) and (123) state that the speaker believes that the truth of  $p$  is uncontroversial, but that nevertheless some individual does not share his opinion that  $p$ . These contrasting beliefs can be seen as the basis for the heightened emotional involvement of the speaker that often accompanies the use of impersonally interpreted *ich* (cf. Section 1.4).

<sup>59</sup>As a first approximation, I propose that the modal *should* in (122) is to be interpreted as: it is necessary given common sense reasoning by a rational agent on the basis of world knowledge.

<sup>60</sup>Carlson (1995) discusses two options for the truth-conditions of generic sentences. The first option are “inductive” approaches to generic sentences, which assume that a generic sentence is true iff “enough” episodic evidence for the truth of the generalization exists. The second option is the type of “rules and regulations” approaches. In this type, a generic sentence is true iff a causal structure constituting the rule exists. Both types of accounts are based on intuitions how people come to accept generic sentences: either by induction over episodic cases or by being told by an authority that a certain generalization holds.

For the second part of the participant-oriented content of impersonally interpreted *du*, I model the intuition proposed in Kitagawa and Lehrer (1990) and Malamud (2006, 2007). Intuitively, the speaker tries to build closeness between him and the addressee, and to appeal to the addressee to “put herself in the shoes” of the individuals for which the generalization is stated. I interpret these intuitions as the speaker inviting the addressee to consider the validity of the generalization.

- (124) Participant-oriented content for *du* - part II:  
 INVITE( $c_S, c_A$ , consider ? $p$ )

The INVITE-operator models the invitation that  $c_S$  extends to  $c_A$ . Whether this invitation has the status of a genuine speech act of inviting still needs to be investigated at this point. Since a detailed discussion requires an in-depth discussion of speech act theory (cf. Austin 1962; Searle 1969 among others), which is beyond the scope of this thesis, this question is also left for further research.

In combination, (122) and (124) state that the speaker believes that the truth of  $p$  is uncontroversial, and that he invites the addressee to consider ? $p$ . If the addressee accepts the invitation to consider ? $p$ , it can be derived from the first part formulated in (122) that the speaker expects that the addressee will accept that  $p$ .

This proposal for the participant-oriented effects of *ich* and *du* still needs to be refined to account for empathy tracking effects (cf. Malamud 2006, 2007; Section 1.4.3). Since these effects guide the speaker’s/the addressee’s empathy to specific syntactic positions, i.e. those occupied by the impersonally used personal pronouns, the proposals in (122), (123), and (124), are too coarse-grained. The main reason is that the components are so far assumed to express attitudes/speech acts involving the entire prepositional content of the generic sentence. At the moment, it is unclear to me how to modify the current proposal to account for empathy tracking effects. Therefore, the necessary in-depth investigation required to answer this question unfortunately has to be left for further research.

The content of the participant-oriented components can be linked to the preferred contexts of use for *ich* and *du*. Impersonally interpreted *ich* conveys that the speaker believes that some individual does not accept the generalization. Consequently, impersonally used *ich* prefers discourse contexts in which the belief is justified. These types of contexts are negative contexts, as described in (125).

- (125) Negative context:  
 A context for which the general statement, rule, law, or norm that is expressed by the sentence containing the pronoun is violated or contested.

In contrast for impersonally used *du*, the invitation issued by impersonally interpreted *du*, together with the assumption of  $p$  being uncontroversial, seems to result in a pref-

erence for contexts in which the speaker cannot assume that the addressee is already strongly committed to  $\neg p$ . In Section 1.4, these contexts were called “positive contexts”, see (126).

(126) Positive context:

A context in which the opinion expressed by the speaker has not been contested, and nothing points towards a possible objection.

These types of contexts are not strictly required, but only preferred by *ich* and *du*. That is, the pronouns are not ungrammatical, and also not necessarily infelicitous in discourse contexts that do not meet the criteria in (125) or (126). In this respect, impersonally used *ich*, *du*, and *man* behave similarly to discourse particles. For discourse particles it has been observed that their preferences with respect to their contexts of use may be disregarded to induce secondary pragmatic effects (cf. Zimmermann 2011a and Appendix A2). Hence, from the point of view of the impersonal uses, discourse particles can be said to contribute participant-oriented not-at-issue meaning.

In sum, the speaker-oriented component of *ich*, *du*, and *man* conveys the speaker’s attitude regarding the applicability of the generalization to himself. In contrast, the participant-oriented content conveys the speaker’s beliefs about the acceptance of the generalization by others for impersonally interpreted *ich*, and issues an invitation to consider  $?p$  for impersonally interpreted *du*.

#### 4.5.4 A conservative new proposal for the impersonal uses

Based on the results in the previous subsection and the assumptions made at the beginning of this section, I propose a new formal account for the meaning of the impersonal uses of *ich*, *du*, and *man*. The account is proposed in such a way that the following desiderata for the semantic and the pragmatic contribution formulated in Section 4.2 are met.

- *Semantic desiderata*: The impersonal uses of *ich*, *du* and *man* need to come out as truth-conditionally equivalent, and generic sentences containing these impersonal uses need to express the same generalizations as ordinary generic sentences.
- *Pragmatic desiderata*: The subject-oriented and the participant-oriented content of *ich* and *du* is not contributed to the truth-conditions of the sentences containing the pronouns. Their function is to comment on these truth-conditions.

For the at-issue content contributed by impersonally interpreted pronouns, I propose that they contribute a free variable to the truth-conditions of the sentence. This is motivated by the observation that generic sentences containing these uses express the same generalizations on the truth-conditional level as ordinary generic sentences.

Additional motivation for the at-issue content being a free variable can be found in the discussion of the (in)definiteness problem in Section 2.4. One of the results of this discussion was that the behavior of the impersonal uses is similar to that of indefinite expressions.

Note that this proposal does not conflict with the results of Section 4.2. There, it was concluded that *ich* and *du* cannot be captured adequately by adopting the adapted version of the complex structure proposed in Elbourne (2008) and its interpretation given in Section 2.5.3. The conclusions in this section did not contest that the impersonal uses are best analyzed as indefinite expressions, as such.

By the assumption that the impersonal uses only contribute a free variable, the desirable results of previous accounts for impersonal pronouns in the literature are replicated (Condoravdi 1989; Chierchia 1995b; Malamud 2006, 2007; Moltmann 2006, 2010a,b).

For the non-at-issue component(s) of *ich*, *du*, and *man*, I propose that these pronouns trigger the CI content proposed in the previous subsection. Hence, taken as a whole, the content contributed by *ich*, *du*, and *man* is as follows.<sup>61</sup>

For the impersonal use of *man*, its contribution to the truth-conditions of a sentence of the form ‘*man* als *F* is *G*’ is a free individual variable. The CI content is the speaker-orientated content defined in (112).<sup>62</sup>

$$(127) \quad \llbracket \textit{man als } F \textit{ is } G \rrbracket^{g,w,c} = \textit{Gen}[x;](F(x); G(x))$$

Speaker-oriented component:

$$\lambda w. [F(c_S)(w) \rightarrow \text{BELIEVE}_w(c_S, \lambda w. N_{F,G}(w)(\langle c_S, w \rangle))] \ \& \ [\neg F(c_S)(w) \rightarrow \text{BELIEVE}_w(c_S, \lambda w. \forall w' \in \text{MaxSim}_{F(c_S),w}[N_{F,G}(w')(\langle c_S, w \rangle))]]$$

Consider the proposed at-issue and CI content for the sentence in (128) given in (129).

$$(128) \quad \begin{array}{l} \textit{Man ist nur einmal jung.} \\ \text{one is only once young} \\ \text{‘One is young only once.’} \end{array}$$

$$(129) \quad \begin{array}{l} \text{a. } \llbracket (128) \rrbracket^{g,w,c} = \\ \quad \forall w' [w \sim_{\text{animate-individual, be-young-only-once}} w' \rightarrow \forall x [\text{animate-individual}(x)(w') \ \& \\ \quad N_{\text{animate-individual, be-young-only-once}}(\langle x, w' \rangle)(w') \rightarrow \text{be-young-only-once}(x)(w')]] \\ \text{b. Speaker-orientation:} \\ \quad \lambda w. \text{BELIEVE}_w(c_S, \lambda w. N_{\text{animate-individual, be-young-only-once}}(w)(\langle c_S, w \rangle)) \end{array}$$

<sup>61</sup>For the meaning of the generic operator, overt modals, and conditional structure in the examples, I again adopt Drewery’s and Kratzer’s accounts introduced in Chapter 3.

<sup>62</sup>For the at-issue content contributed by the sentences, I employ the notation proposed for *Gen* in Krifka et al. (1995). Cf. Chapter 3.

As stated in the previous subsection (cf. also Appendix A1), the default restriction on the domain of the variable contributed by the pronouns is—in the absence of an *als*-phrase—the property of being an animate individual. Since every speaker has the property of being an animate individual, the first case of the speaker-oriented component applies, and the content can be simplified to (129-b).

In contrast to the meaning contributed by *man*, the contribution of impersonal uses of *ich* and *du* has two CI components. Like *man*, both pronouns contribute a free individual variable to the truth-conditions of the sentence.

- (130)  $\llbracket ich\ als\ F\ am\ G \rrbracket^{g,w,c} = Gen[x;](F(x); G(x))$
- a. Speaker-oriented component:  
 $\lambda w.[F(c_S)(w) \rightarrow BELIEVE_w(c_S, \lambda w.N_{F,G}(w)(\langle c_S, w \rangle))] \ \& \ [\neg F(c_S)(w) \rightarrow BELIEVE_w(c_S, \lambda w.\forall w' \in \text{MaxSim}_{F(c_S),w}[N_{F,G}(w')(\langle c_S, w \rangle))]]$
  - b. Participant-oriented component:  
 $\lambda w. BELIEVE_w(c_S, \text{all individuals that consider } ?p \text{ should accept that } p \ \& \ \text{there is a specific individual that does not accept that } p)$

For the specific example in (131), the account derives the content in (132).

- (131) *Ich muss als Mannschaft motiviert auf den Platz gehen.*  
 I must as team motivated on the field go  
 ‘A team has to enter the field motivated.’

- (132) a.  $\llbracket (131) \rrbracket^{g,w,c} =$   
 $\forall w'[w \sim_{\text{team}, \square \text{enter-field-motivated}} w' \rightarrow$   
 $\forall x[\text{team}(x)(w') \ \& \ N_{\text{team}, \square \text{enter-field-motivated}}(\langle x, w' \rangle)(w') \rightarrow$   
 $\forall w'' \in O(\mathbf{f}, \mathbf{g}, w')[\text{enter-field-motivated}(x)(w'')]]]$
- b. Speaker-orientation:  
 $\lambda w. BELIEVE_w(c_S, \lambda w.\forall w' \in \text{MaxSim}_{\text{team}(c_S),w}[N_{\text{team}, \square \text{enter-field-motivated}}(w')(\langle c_S, w \rangle)])$
  - c. Participant-orientation:  
 $\lambda w. BELIEVE_w(c_S, \text{all individuals that consider } ?p \text{ should accept that } p \ \& \ \text{there is an individual that does not accept that } p)$   
 where  $p$  is the at-issue content of (131)

Since the speaker can never be a team, the second case of the speaker-oriented component applies, and the content can be simplified to (132-b).<sup>63</sup>

One potential point of criticism for the analysis in (132) is that counterfactually assuming that the speaker is a plurality of individuals seems odd; it raises questions

<sup>63</sup>I assume that group-denoting noun phrases, like *team*, *group*, *couple*, and *family* denote sum-individuals in the sense of Link (1983). This is supported by the fact that they are morphologically singular.

regarding identity statements between individuals that are semantically singular and individuals that are semantically plural. There are, however, attested identity counterfactuals of this kind. Consider the examples in (133).

- (133) a. *Wenn ich diese Mannschaft wäre, würde ich auf mein  
if I this team were would I on my  
Zweitligastartrecht bestehen.  
second-league-authorization-to-compete insist  
'If I were this team, I would insist on my authorization to compete in the  
second league.'*<sup>64</sup>
- b. *Wenn ich dieses Paar wäre, würde ich mir mal Gedanken  
if I this couple were would I me at-some-point thoughts  
machen, warum das Kind mit denen nichts zu tun haben will.  
make why the child with them nothing to do have wants  
'If I were this couple, I would wonder at some point about the reason  
why the child doesn't want anything to do with me/them.'*<sup>65</sup>

Therefore, any feeling of uneasiness that accompanies counterfactuals of this kind has to be addressed as part of a more general analysis of identity counterfactuals, which is beyond the scope of this thesis and is left for further research.<sup>66</sup>

And lastly, the meaning contributed by the impersonal use of *du* is given in (134).

- (134)  $[[du \text{ als } F \text{ are } G]]^{g,w,c} = Gen[x;](F(x); G(x))$
- a. Speaker-oriented component:  
 $\lambda w.[F(c_S)(w) \rightarrow BELIEVE_w(c_S, \lambda w.N_{F,G}(w)(\langle c_S, w \rangle))] \& [\neg F(c_S)(w) \rightarrow BELIEVE_w(c_S, \lambda w.\forall w' \in \text{MaxSim}_{F(c_S),w}[N_{F,G}(w')(\langle c_S, w \rangle))]]$
- b. Participant-oriented component:  
 $\lambda w.BELIEVE_w(c_S, \text{all individuals that consider } ?p \text{ should accept that } p)$   
 $\& INVITE(c_S, c_A, \text{consider } ?p)$

This proposal is illustrated by the following example.

- (135) *Du musst als Mannschaft auf alles vorbereitet sein.  
you must as team for everything prepared be  
'A team has to be prepared for everything.'*<sup>67</sup>

<sup>64</sup><http://www.hallenradsport-forum.de/viewtopic.php?t=2056&sid=b61cf631346d2d8cef12ea25f6da2fcb>

<sup>65</sup>[http://forum.buffed.de/index.php/topic/82219-eltern-gegen-wow-sucht/page\\_\\_st\\_\\_-10](http://forum.buffed.de/index.php/topic/82219-eltern-gegen-wow-sucht/page__st__-10)

<sup>66</sup>An interesting point is illustrated in (133-b), in which the speaker mixes first person singular *ich* with the third person plural demonstrative *denen* (Engl. 'those', dat.) in the consequent of the counterfactual. While *denen* could alternatively be substituted by *mir* (Engl. 'me', dat.), *ich* may not be substituted by *die* (Engl. 'those' nom.) or *sie* (Engl. 'they').

<sup>67</sup>[http://www.sport1.de/de/fussball/fussball\\_bundesliga/artikel\\_275528.html](http://www.sport1.de/de/fussball/fussball_bundesliga/artikel_275528.html)

- (136) a.  $\llbracket (135) \rrbracket^{g,w,c} =$   
 $\forall w' [w \sim_{\text{team}, \square \text{be-prepared-for-everything}} w' \rightarrow$   
 $\forall x [\text{team}(x)(w') \& N_{\text{team}, \square \text{be-prepared-for-everything}}(\langle x, w' \rangle)(w') \rightarrow$   
 $\forall w'' \in O(\mathbf{f}, \mathbf{g}, w') [\text{be-prepared-for-everything}(x)(w'')]]$
- b. Speaker-orientation:  
 $\lambda w. \text{BELIEVE}_w(c_S, \lambda w. \forall w' \in$   
 $\text{MaxSim}_{\text{team}(c_S), w} [N_{\text{team}, \square \text{be-prepared-for-everything}}(w')(\langle c_S, w \rangle)])$
- c. Participant-orientation:  
 $\lambda w. \text{BELIEVE}_w(c_S, \text{all individuals that consider } ?p \text{ should accept that } p)$   
 $\& \text{INVITE}(c_S, c_A, \text{consider } ?p)$   
 where  $p$  is the at-issue content of (135)

As for (131) above, only the second case of the speaker-oriented component applies, and the content may be simplified accordingly.

In sum, it was proposed that the impersonal readings of *ich*, *du*, and *man* contribute a free variable to the at-issue content of the sentence. Their main function, however, is to contribute CI content which models the two pragmatic components at the heart of the pragmatic effects observed with these pronouns: the speaker-oriented component and the participant-oriented component.

#### 4.5.5 A daring, pure CI alternative

As an alternative to the rather conservative account for the impersonal uses of *ich*, *du*, and *man* proposed in the previous subsection, a more daring idea could be pursued. The central aspect of this idea is to assume that in their impersonal uses, the pronouns *ich*, *du*, and *man* trigger only their not-at-issue content. This implies that the impersonal uses of the three pronouns are pure CI triggers like appositives and expressives. The aim of this subsection is to briefly sketch this idea.

Regarding the truth-conditional content of the sentences containing *ich*, *du*, or *man*, the following question immediately arises: What does the generic operator bind if the pronouns do not contribute anything that could be bound? To answer this question, the behavior of the generic operator *Gen* needs to be considered.

So far, no satisfactory, fully compositional account for generic sentences has been proposed in the literature that can account for the distribution of the lexical material given in a generic sentence into the restrictor and scope of *Gen* (cf. Krifka et al. 1995). Given the behavior of the generic operator in the non-compositional accounts, however, it seems that *Gen* can bind unfilled argument positions of properties in its scope, which are connected syntactically to the material in its restrictor. Consider the relational analysis in (137-b) for the sentence in (137-a) as proposed in Krifka et al. (1995).

- (137) a. *A lion has a bushy tail.*  
 b.  $\text{Gen}[x; ](\text{lion}(x); \text{has-a-bushy-tail}(x))$

Since the indefinite expression in subject position is interpreted in the restrictor of *Gen*, it cannot be given as an argument to the matrix predicate in the scope of the operator. That is, the individual argument of the matrix predicate,  $\lambda x.\text{has-a-bushy-tail}(x)$ , stays empty. For the analysis in (137-b) to arise, it has to be assumed that the  $\lambda$ -operator that binds the variable in the argument position is discarded so that the generic operator can bind the resulting free variable. Consider example (138) against this picture.

- (138) *Man muss als Bauer seine Kühe melken.*  
 one must as farmer one's cows milk  
 'As a farmer, one has to milk one's cows.'

In example (139), I encode the distribution of the lexical material in (138) in the restrictor and the scope of *Gen* by different underlining: double underlining marks material in the restrictor, single underlining marks material in the scope. Material that is crossed out does not contribute at-issue content.

- (139) ~~Man~~ kann als Bauer seine Kühe melken.

The single and double underlined material contains all of the descriptive content that occurs in this sentence, and hence all of the descriptive material that is needed to formalize the generalization expressed by that sentence. Therefore, in analogy to the material in the scope of the generic operator, it could be argued that the empty argument positions of the property in the restrictor, *als Bauer* (Engl. 'as a farmer'), can be bound in a similar fashion by *Gen*. In other words, all argument positions that would be filled by a variable contributed by *man* in the account proposed in the previous subsection can stay semantically unfilled. And precisely these unfilled argument positions will be bound by *Gen*.

These assumptions about *Gen* suggest a rather unconventional reason for why personal pronouns in their impersonal uses behave like indefinites: the pronouns simply do not contribute anything to the truth-conditions of their containing sentences. The argument positions that are syntactically filled by the personal and impersonal pronouns in their impersonal uses stay unfilled at the at-issue level, and are then bound by the generic operator. This predicts that the unfilled argument positions of the properties in the restrictor of *Gen* are treated similarly to unbound variables of Heimian indefinites.

Whether this more radical account for the impersonal readings for *ich* and *du* is to be preferred, or has to be discarded, depends on whether the view on the behavior of the generic operator suggested above turns out to be tenable. This question is left for further research, along with a more detailed proposal of this alternative account.

## 4.6 The connection between the impersonal and referential uses

As a reminder, the account proposed in Section 4.5 for the impersonal uses of *ich* and *du* is a non-uniform account that assigns a different semantics to the referential uses and the impersonal uses of these pronouns. For the referential use, I adopted a traditional Kaplanian semantics, and I proposed that on the impersonal use, *ich* and *du* contribute a free variable at the at-issue level and additional CI content at the not-at-issue level.

Given the identical form of the impersonal and referential uses, as well as their shared morphosyntactic behavior, the question arises of how the meaning of the two uses relate to each other. In other words, are the two uses linked, and if so, how?

The aim of this section is to briefly explore two possible ways the impersonal use and the referential use might be linked: The first possibility is based on the idea that the impersonal uses are the result of a pragmatic shift, i.e. there is a pragmatic process that “derives” the impersonal reading from the referential reading. The second possible way to link the two uses of *ich* and *du* involves the assumption of lexical ambiguity, i.e. the lexicon of German contains two homophonic lexical items for each pronoun. Together with sketches of how to spell out the two possibilities, I suggest promising points of departure for a more in-depth investigation of these proposals, and I discuss some of their disadvantages and possibly undesirable predictions. However, it has to be stressed that the following discussion only provides a first look at this very complex question.

The first option that the impersonal use is derived from the referential use by a pragmatic shifting process can be made precise in at least two ways. Both involve the same assumption that the lexically encoded meaning of the pronouns is the directly-referential meaning contributed by the referential use. The meaning of the impersonal use is not specified in the lexicon.

The first way to make the idea of a pragmatic shift more precise is to propose that it infers the at-issue and CI content of sentences containing an impersonally interpreted personal pronoun from the at-issue content of the sentence in which the pronoun is interpreted referentially. That is, a pragmatic process  $--\rightarrow$  needs to be assumed which performs a shift in conveyed content as given schematically in (140).<sup>68</sup>

- (140) a. *ich*:  $\phi[c_S] --\rightarrow Gen[x;]\phi[x] + \text{CI content}$  (as proposed in Section 4.5)  
 b. *du*:  $\phi[c_A] --\rightarrow Gen[x;]\phi[x] + \text{CI content}$  (as proposed in Section 4.5)

An example of this type of pragmatic process, for instance, is the derivation of conversational implicatures.

<sup>68</sup>The notation  $\phi[x]$  is used to denote that the expression  $x$  occurs in the expression  $\phi$ .

The central argument against this version of a pragmatic shift for the impersonal uses is that the process that is assumed to be performed by  $\dashrightarrow$  in (140) is too specific to be done by a general pragmatic process operating on sentences. In other words, the intended output of the process, i.e. the meaning of the impersonal use, cannot be plausibly construed as the result of a context dependent pragmatic process.

Furthermore, the process in (140) does not only derive additional pragmatically inferred content, but changes part of the at-issue meaning of the input sentence. This is, again, usually not assumed to be the case for pragmatic processes of this kind.

Lastly, Nunberg's (1993) argument against a treatment of deferred ostension as a pragmatic shifting process also applies to this case (cf. Section 2.5.1). The pragmatic process in (140) sometimes has to generate plausible at-issue content from implausible or even impossible input propositions. Consider for instance the example in (141).

- (141) *Ich muss halt als "Allgemeinheit" bereit sein, mir meine Infrastruktur  
I must PRT as community willing be me my infrastructure  
auch etwas kosten zu lassen.  
also something expense to let  
'A community has to be willing to pay a certain price for its infrastructure.'*<sup>69</sup>

The schemata given in (140) suggest that the at-issue content of (141), as well as the CI-content triggered by *ich* are derived from the input proposition in (142).

- (142) #As a community, I have to be willing to pay a certain price for the infrastructure.

The obvious pragmatic oddness of (142) arises from the speaker's proposed status as a community. If the meaning of (141) were derived from this at-issue content by a general pragmatic process, it is unclear why the result of the process should be a coherent generalization about communities. In addition, the implausibility of (142) cannot be seen as the trigger of this pragmatic process since many examples for the impersonal readings of *ich* and *du* can be plausibly interpreted as statements about the speaker and the addressee (cf. Section 1.2).

The second option to connect the impersonal reading to the referential reading via a pragmatic shifting process is to assume that pragmatic processes may apply during semantic composition. That is, there is a pragmatic process which shifts the meaning of the referentially used personal pronoun to the contribution of the impersonal use before semantic composition rules combine the meaning contributed by the pronoun with the rest of the sentence.

Two proposals of this kind can be found in the literature, and can be taken as points of departure: (i) the general idea of "truth-conditional pragmatics" proposed in

<sup>69</sup>[http://derstandard.at/plink/1226067142914?sap=2&\\_pid=11193953#pid11193953](http://derstandard.at/plink/1226067142914?sap=2&_pid=11193953#pid11193953)

Recanati (2010), and (ii) the formal system for CI contents proposed in Potts (2005). The upshot of the following discussion is that defining a shifting operator is possible, but may ultimately be unsatisfactory.

Let us first take a look at Recanati (2010), who argues for a view on semantic composition which directly interacts with pragmatic processes. He calls this view “truth-conditional pragmatics”. The central idea is that compositional rules do not necessarily compose the literal meaning of two expressions. Certain pragmatic processes may act on the literal meaning and shift it to a pragmatically inferred meaning before the compositional rules apply. This is schematically represented in (143).<sup>70</sup>

$$(143) \quad \llbracket \alpha\beta \rrbracket^{g,w,c} = f(\mathcal{G}^1(\llbracket \alpha \rrbracket^{g,w,c}), \mathcal{G}^2(\llbracket \beta \rrbracket^{g,w,c}))$$

where  $f$  is a semantic composition function corresponding to a composition rule, and  $\mathcal{G}^1, \mathcal{G}^2$  are pragmatic processes

Note that the variables used to represent the processes  $\mathcal{G}^1$  and  $\mathcal{G}^2$  are not present in either the syntactic or the semantic representations of the string  $\alpha\beta$ ; (143) should only be read as an explication of Recanati’s idea.

Given this general schema of the effect of pragmatic processes on semantic composition, it could be assumed that the meaning contributed by *ich* and *du* in their impersonal use is the result of some local pragmatic process which shifts the meaning of the referential use to the meaning of the impersonal use. This shift is schematically given in (144).

$$(144) \quad \text{There is a pragmatic process } \mathcal{G}^{\text{imp}} \text{ which performs the following shift for } \text{PRON} \in \{\textit{ich}, \textit{du}\}: \mathcal{G}^{\text{imp}}(\llbracket \text{PRON} \rrbracket^{g,w,c}) = x + \text{CI content (as proposed in Section 4.5)}$$

A similar idea is proposed in a syntacticized fashion in Potts (2005). The following proposal can be seen as a quasi-syntacticized version of the pragmatic shifting operator  $\mathcal{G}^{\text{imp}}$  in (144). Note that Potts’ system can only be used to formalize the idea of a pragmatic shifting process for the second variant of the proposal given in Section 4.5.5 since it does not capture linguistic expressions that simultaneously contribute content to the at-issue and the CI dimension.<sup>71</sup>

To model the shift from the lexical meaning to the contribution of the impersonal use, an operator IMP similar to Potts’ COMMA-operator in (145) is introduced.

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<sup>70</sup>The schema in (143) is adapted to the formalism used in this thesis. Recanati’s original formulation is as follows:

(i)  $I(\hat{\alpha}\hat{\beta}) = f(g_1(I(\alpha)), g_2(I(\beta)))$   
 where  $I$  is the interpretation function,  $g_1, g_2$  are pragmatic processes,  $\hat{\alpha}\hat{\beta}$  is the compound string of  $\alpha$  and  $\beta$ , and  $f$  is a semantic composition function

<sup>71</sup>As mentioned in Section 4.4, this restriction has been challenged by various researchers. Since the formalization below is only proposed for expository purposes, I disregard this criticism.

(145) COMMA  $\rightsquigarrow \lambda X \lambda x. X(x) : \langle \langle \sigma^a, t^a \rangle, \langle \sigma^a, t^c \rangle \rangle$ , where  $\sigma \in \{e, s, t\}$   
 (Potts 2005:136)

(146) IMP  $\rightsquigarrow \lambda x. \lambda \phi. \text{comment}(x)(\phi) : \langle \langle e^a \rangle, \langle t^a, t^c \rangle \rangle$

The IMP-operator defined in (146) takes the pronominal element as its first argument, and returns a CI trigger which takes the at-issue content of the sentence as its argument, and returns the CI content for the respective pronominal element. The “comment”-function assigns the conjunction of the speaker-oriented component shared by *ich*, *du*, and *man*, on the one hand, and the respective participant-oriented component for *ich* and *du*, on the other hand, to the respective pronominal argument. The derivation of the impersonal uses of *ich* and *du* in Potts’ system is illustrated in (147) and (148).

(147)

$$\begin{array}{c} S:t^a \bullet \text{comment}(ich)(S):t^c \\ \swarrow \quad \searrow \\ \text{imp}(ich):\langle t^a, t^c \rangle \quad S:t^a \\ | \\ ich:e^a \end{array}$$

(148)

$$\begin{array}{c} S:t^a \bullet \text{comment}(du)(S):t^c \\ \swarrow \quad \searrow \\ \text{imp}(du):\langle t^a, t^c \rangle \quad S:t^a \\ | \\ du:e^a \end{array}$$

Note that the argument  $S : t^a$  is the fully derived meaning of the generic sentence, as proposed for the second version of the account in Section 4.5.

Amaral et al. (2007) discuss two problems for the COMMA-operator. First, the operator is motivated by phonetic considerations, i.e. comma intonation as observed for appositives. However, there are appositives that are not uttered with clear comma intonation, see (149-a), as well as comma intonation which does not mark linguistic expressions that contribute CI content, see (149-b).

- (149) a. *Mon frère a malheureusement raté son avion.*  
 my brother has unfortunately missed his plane  
 ‘My brother, unfortunately, missed his plane.’  
 b. *Ed, before he fled, was very secretive.*  
 (Amaral et al. 2007:721)

Second, the definition of COMMA in (145) runs into problems with topic-oriented adverbs, like *thoughtfully*, which do not have the required types for COMMA to shift their content onto the CI dimension. See (150).

- (150) *thoughtfully*  $\rightsquigarrow \lambda p.\text{thoughtfully}(p)(x_1) : \langle \langle s^a, t^a \rangle, \langle s^a, t^a \rangle \rangle$   
 (adapted from Potts 2005:144)

Since the COMMA-operator requires its first argument to be of type  $\langle \sigma^a, t^a \rangle$ , with  $\sigma \in \{e, s, t\}$ , and the adverb *thoughtfully* is of type  $\langle \langle s^a, t^a \rangle, \langle s^a, t^a \rangle \rangle$ , the COMMA-operator cannot combine with it. Consequently, *thoughtfully* should not be able to introduce CI-content.

The IMP-operator defined above does not run into these problems. IMP does not have to deal with expressions of different types. Therefore, Amaral et al.'s (2007) second problem does not arise for IMP. And while no strict criterion for the presence of IMP can be given, (151) gives two necessary conditions for its presence.

- (151) Necessary conditions for the use of IMP:
- a. the first argument of type  $e^a$  is not stressed
  - b. the at-issue content of the sentence does not express an episodic statement

Regardless of the rather strong restrictions in (151), the use of IMP is quite obviously not restricted enough. Any expression of type  $e^a$  that occurs in a generic sentence, and that obeys the first condition in (151) still counts as a valid argument for IMP. This includes kind-denoting definite singular noun phrases in generic sentences.

- (152) *The lion is a dangerous animal.*

To solve this problem of overgeneration, the application of IMP could/should be further restricted to singular pronominal expressions only. This restriction would only capture the behavior of languages like German, though, which allow impersonal readings for first and second person singular pronouns. For languages like English that only have an impersonal use for second person singular pronouns, the application of IMP would need to be restricted even further. However, for both versions of the local pragmatic shift option this is undesirable: introducing a general pragmatic shifting operator, and restricting it ad hoc to one or two lexical items does not provide any substantial insights on the connection between the referential use and the impersonal use of personal pronouns. Nevertheless, I believe that the arguments given here do not suffice to discard this option just yet. Further research on the nature of pragmatic processes and their interaction with semantic composition, as well as analyses of other phenomena for which referential and non-referential uses exist may still tip the scale in favor of an underlying pragmatic shifting process.

The second alternative to link, or rather not to link the referential use to the impersonal use is to assume that the two uses are the result of lexical ambiguity. That is,

the German lexicon might contain two entries for the pronoun *ich* and two entries for *du*, as specified in (153) and (154).

- (153) a.  $\llbracket ich_{\text{ref}} \rrbracket^{g,w,c} = c_S$   
 b.  $\llbracket ich_{\text{imp}} \rrbracket^{g,w,c} = x + \text{CI content}$

- (154) a.  $\llbracket du_{\text{ref}} \rrbracket^{g,w,c} = c_A$   
 b.  $\llbracket du_{\text{imp}} \rrbracket^{g,w,c} = x + \text{CI content}$

Malamud (2006, 2007) argues against assuming an account based on lexical ambiguity for personal pronouns with impersonal uses. Her first argument is that the availability of impersonal uses for second person singular pronouns is too cross-linguistically widespread for it to be a lexical accident in all of these languages. Her second argument is that since the pragmatic effects of the impersonal uses of second person singular pronouns are strongly connected to the referential use, to assume some sort of connection between the two uses seems to be more plausible than an account based on lexical ambiguity.

While I basically agree with Malamud on these points, her second argument is, to my mind, compatible with  $ich_{\text{imp}}$  and  $du_{\text{imp}}$  having derived diachronically from the referential lexical entries. Or more generally, the second argument is compatible with the two uses being two alternative meanings of polysemous lexical items. Malamud's first question of why this should have happened cross-linguistically in such a similar and principled manner is not answered by these analyses. Hence, this argument could be taken as a true counterargument for this view.

Given the outlines of the two options, the pragmatic shifting process or the lexical ambiguity: How can one decide which of the two options seems more promising?

One argument in favor of the pragmatic shift is based on the fact that the morphosyntactic behavior of the impersonal uses is the same as the morphosyntactic behavior of the referential uses. Assuming an account based on lexical ambiguity would sever the connection between morphosyntax and semantics that is assumed in most of the recent literature on the syntax and semantics of personal pronouns (cf. Heim and Kratzer 1998; Harley and Ritter 2002; Kratzer 2009). On the ambiguity view, it could be assumed that for the lexical items  $ich_{\text{ref}}$  and  $du_{\text{ref}}$ , the meaning is derived from, or connected to the set of  $\phi$ -features assumed in the literature. However, for morphosyntactic reasons the same assumption has to be made again for  $ich_{\text{imp}}$  and  $du_{\text{imp}}$ . The crucial difference would be, though, that this same set of  $\phi$ -features may not contribute any at-issue content, or trigger presuppositions on the truth-conditional meaning for  $ich_{\text{imp}}$  and  $du_{\text{imp}}$ .

In contrast to the lexical ambiguity option, the option involving a pragmatic shifting process allows for the meaning of the personal pronouns to be specified by their  $\phi$ -

feature sets before they are mapped onto the meaning that they contribute in the impersonal uses. Hence, this story is compatible with the assumptions in the syntax-semantics literature on pronouns.

Since a definitive answer for one or the other option requires a detailed discussion of the basic architecture of the interpretational system, and possible interactions between semantics and pragmatics as discussed in Recanati (2010), I leave a detailed discussion of this issue for further research.

## 4.7 Summary

In Section 4.2, I critically evaluated and discarded the unified, purely semantic account proposed in Section 2.5.3 in combination with the results of Chapter 3. It was concluded that a semantically underspecified account of the form proposed in Section 2.5.3 makes many undesirable predictions that can be traced back to the descriptive content that is contributed as part of the meaning of the impersonal/referential uses. However, one part of the motivation to introduce the underspecified, context-dependent descriptive content in Chapter 2 was to capture the pragmatic effects for the impersonal uses. So, for the remaining sections of this chapter I turned to examine the pragmatic effects in greater detail.

As a starting point, I took the discussion of the pragmatic effects of the English impersonal pronoun *one* in Moltmann (2006, 2010a,b). In Section 4.3, I summarized Moltmann's observations and her formal account for the meaning of *one*. In addition, I discussed problems that arise for her proposal, and concluded that her insights on the use of *one*, which carry over to impersonally used *ich*, *du*, and *man*, need to be captured in a different manner.

In Section 4.5, I argued that the pragmatic effects of impersonally interpreted *ich*, *du*, and *man* need to be analyzed as the result of not-at-issue content. I briefly discussed traditional and more recent work on not-at-issue content in Section 4.4. The diagnostic tests that were introduced there to argue that the speaker-oriented and the participant-oriented component of *ich*, *du*, and *man* contribute CI content as described in Potts (2005).

On the basis of this result, I proposed a novel account for the content of the speaker-oriented and participant-oriented components in Section 4.5, which derives (i) the intuitions for the pragmatic effects of *one* and German *man* described in Moltmann (2006, 2010a,b) and Zifonun (2000), (ii) the invitational character of impersonal second person singular pronouns described in Kitagawa and Lehrer (1990) and Malamud (2006, 2007), and (iii) the distancing effect of German impersonally interpreted *ich* (cf. Section 1.4). In addition, the same at-issue contribution is assigned to impersonally used pronouns. Consequently, the account makes the same predictions regarding the meaning of generic

sentences containing these pronouns as the accounts proposed in Condoravdi (1989); Chierchia (1995b); Malamud (2006, 2007); Moltmann (2006, 2010a,b).

Lastly, in Section 4.6, I discussed two possibilities of how the new two-dimensional account for the meaning of impersonally interpreted personal pronouns can be linked to a traditional, directly referential account for the referential uses of these pronouns. I discussed and compared two options: a pragmatic shifting process and lexical ambiguity. No definitive decision for or against either option was made.

As a final side note and to connect the results of this chapter back to Chapter 1, I suggest that the formalization of the impersonal uses of *ich* and *du* proposed in Section 4.5 provides a new point of view on the intuitions behind the “Counterfactual Hypothesis” discussed and discarded in Section 1.6.

The gist of the hypothesis was that sentences containing impersonal uses of singular personal pronouns are underlyingly identity counterfactuals. Given the discussion of generic sentences in Chapter 3 and the proposal from this chapter, this intuition seems to be connected to the property of generic sentences to support inferences to appropriate counterfactuals and to the pragmatic components of the impersonal uses. If sentences containing impersonal uses of *ich* support inferences to appropriate counterfactuals, they also support counterfactual inferences to the speaker (if the speaker may be assumed to be relevantly non-exceptional regarding the content of the generalization). Consider the example in (155).

- (155) *Ich muss als Bauer meine Kühe melken. Wenn ich (selbst) also*  
 I must as farmer my cows milk if I personally therefore  
*ein Bauer wäre, müsste ich meine Kühe melken.*  
 a farmer were would-have-to I my cows milk  
 ‘A farmer has to milk his cows. Therefore, if I, myself, were a farmer, I would  
 have to milk my cows.’

One result of Section 4.5 was that the speaker-oriented component of *ich* conveys that the speaker is, or would be, a relevantly non-exceptional individual regarding the generalization. That is, the speaker in fact communicates with the CI content of impersonally used *ich* that she believes that she is relevantly non-exceptional. Therefore, in combination the at-issue content and the CI content of sentences containing impersonal uses of *ich* jointly communicate the content of the identity counterfactuals that were taken as the basis for the “Counterfactual Hypothesis”.

# Conclusion

## Summary

The central topic of this thesis are the semantic and pragmatic aspects of the impersonal uses of personal pronouns. In Chapters 1–4, I discussed both the empirical picture that arises from the data, as well as formal analyses that try to account for these observations in different ways. The investigations were conducted using the example of German first and second person singular *ich* (Engl. ‘I’) and *du* (Engl. ‘you’). The main results of this work are not specific for German, though. Hence, they should be generalizable to impersonal uses found in other languages; results that were obtained for the German pronouns were compared to previous work on English impersonally used *you* throughout the thesis.

The line of argumentation and the core arguments of this thesis are best summarized on the basis of examples (1) and (2) and their contexts.<sup>1</sup>

**Context:** “How much money does one give as a present at a wedding?” - The initial question is whether 100 Euros is enough. One user argues that it is customary to adjust the amount of money relative to the size and cost of the wedding party held by the bridal couple. Another user takes issue with this claim with the following utterance:

- (1) *Ich find das ist ein total doofes Argument! Ich kann doch als I think this is a totally stupid argument I can PRT as Brautpaar nicht von meinen Gästen erwarten, dass sie mir bridal-couple not from my guests expect that they me quasi die Feier finanzieren! more-or-less the party finance 'I think this is an absolutely stupid argument! The bridal couple can't expect their guests to more or less pay the party!' <sup>2</sup>*

**Context:** During an interview, the coach of the German ice hockey national team talks about the frequent and regular occurrence of situations in which weaker teams beat stonger teams in professional sports. He argues that these situations will continue

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<sup>1</sup>These are the first examples given in this thesis for the impersonal uses of *ich* and *du*, see examples (2) and (3) of the Introduction.

<sup>2</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

to happen, and cannot be prevented. He says that in a match, being the stronger team never guarantees a victory, and continues with:

- (2) *Du* *musst* *als* *Mannschaft* *einfach* *mehr* *gewinnen* *wollen* *als* *der* *Gegner*.  
 you must as team simply more win want than the opponent  
 'As a team your wish to win simply has to be greater than your opponent's.'<sup>3</sup>

In Chapter 1, the morphosyntactic, semantic, and pragmatic behavior of the impersonal uses as observable in the data were discussed. On the morphosyntactic level, it was observed that the impersonal and referential uses of *ich* and *du* behave identically. On the semantic level, though, the core observations were (i) that sentences containing impersonally used *ich* or *du* need to be analyzed as generic sentences, and (ii) that the impersonal uses of *ich* and *du* are truth-conditionally equivalent with the default impersonal use of the dedicated impersonal pronoun *man* (Engl. 'one'). Hence in their impersonal uses, the three pronouns *ich*, *du*, and *man* can be substituted for each other *salva veritate*. Examples (3) and (4) give the variants of (1) and (2) derivable by substitution.

- (3) a. *Man* *kann* *doch* *als* *Brautpaar* *nicht* *von* *seinen* *Gästen* *erwarten*, *dass* *sie* *einem* *quasi* *die* *Feier* *finanzieren*.  
 b. *Du* *kannst* *doch* *als* *Brautpaar* *nicht* *von* *deinen* *Gästen* *erwarten*, *dass* *sie* *dir* *quasi* *die* *Feier* *finanzieren*.
- (4) a. *Man* *muss* *als* *Mannschaft* *einfach* *mehr* *gewinnen* *wollen* *als* *der* *Gegner*.  
 b. *Ich* *muss* *als* *Mannschaft* *einfach* *mehr* *gewinnen* *wollen* *als* *der* *Gegner*.

The main difference between the impersonal uses of the three pronouns lies in their pragmatic effects. While all three pronouns share a speaker-oriented component, impersonally used *ich* and *du* convey different, additional participant-oriented content, which also has an influence on the pronouns' preferred contexts of use.

In the last section of Chapter 1, I rejected an analysis of sentences containing impersonally used personal pronouns as expressing counterfactual statements. The main idea behind this analysis was that the following identity counterfactuals capture the meaning that is expressed by (1) and (2).

- (5) a. *If I were a bridal couple, I could not expect my guests to pay for the party.*  
 b. *If you were a team, you would have to want to win more than your opponent.*

The intuitive meaning of the examples in (1) and (2), however, differs one a crucial respect from the identity counterfactuals above: (1) and (2) do not express specific statements about the speaker or the addressee, in any way. The perceived link between

<sup>3</sup><http://www.netzathleten.de/Sportmagazin/Star-Interviews/Interview-mit-Eishockey-Bundestrainer-Uwe-Krupp-Besser-spielen-als-in-Bern/5761358233643659016/head>

the referential and the impersonal uses, which is at the heart of this intuitively appealing account, only pertains at the pragmatic level.

In Chapter 2, the truth-conditional equivalence between impersonally used *ich*, *du*, and *man* was taken as the basis for a unified account that aims at capturing the referential and the impersonal uses of personal pronouns. I followed previous literature on impersonal pronouns and impersonal uses of personal pronouns in assuming that the impersonal uses of *ich* and *du* are best analyzed as indefinite expressions. The perceived link between the referential and impersonal uses was taken as motivation to construct an underspecified semantics for *ich* and *du* that models the pronouns in both uses as indefinite expressions. Further motivation for this unified account came from Nunberg's (1993) proposal for the meaning of personal pronouns, which was formalized in Elbourne (2008). The core of the resulting analysis is that personal pronouns are indefinite expressions that contribute a free individual variable that is restricted by contextually determined descriptive content. For the impersonal uses, the descriptive content is intended to model the underlying pragmatic link to the current speaker and the current addressee, which is observable for the pragmatic effects. The impersonal flavor is contributed by the generic operator *Gen*, which binds the free variable contributed by the pronouns. For instance, the truth-conditions of (1) and (2) are proposed to be (6-a) and (6-b), respectively.

- (6) a.  $\text{Gen } [x; ](\text{bridal-couple}(x) \ \& \ \text{identifies-with}(x)(c_S);$   
            $\text{can-not-expect-the-guests-to-pay-for-the-party}(x))$   
       b.  $\text{Gen } [x; ](\text{team}(x) \ \& \ \text{identifies-with}(x)(c_A);$   
            $\text{has-to-want-to-win-more-than-the-opponent}(x))$

The referential use of *ich* and *du*, on the other hand, arises when the descriptive content is set to the property of being identical to the current speaker or the current addressee, and the free variable is existentially closed.

In the last section of Chapter 2, I discussed the problems that arise for this unified account. The majority of the issues can be traced back to two aspects of the analysis: (i) modelling the pragmatic effects as descriptive content at the truth-conditional level, and (ii) modelling the referential uses as indefinite expressions. In addition, two issues were identified that arise for the simple analysis of the intensional sentential contexts found with the impersonal uses adopted in Chapter 2. The first issue concerns the modal interpretation of *Gen*; one desideratum was to find an analysis that adequately interacts with the meaning contributed by the personal pronouns. The second issue concerns the behavior and interpretation of modals that co-occur with impersonally interpreted personal pronouns. Both of these issues were addressed in Chapter 3.

In the first part of Chapter 3, three accounts for the semantics of *Gen* were introduced, compared, and evaluated against a list of desiderata determined on the basis of

the observations made in Chapter 2. As the semantic contribution of *Gen*, I adapted the proposal put forth in Drewery (1998) to the formal framework used in this thesis. Example (7) illustrates the resulting meaning proposed for a generic sentence.

$$(7) \quad \forall w'[w \sim_{F,G} w' \rightarrow \forall x[F(x)(w') \ \& \ N_{F,G}(w')(\langle x, w' \rangle) \rightarrow G(x)(w')]]$$

Regarding the behavior and interpretation of any modal verbs that are found in the data, I argued that modals of these particular flavors, i.e. non-epistemic modals, cannot act as binders for the free variable contributed by the impersonal uses. In fact, I showed that they are always interpreted in the scope of *Gen*.<sup>4</sup> In the remainder of Chapter 3, I spelled out the details of this two-operator account by investigating the interaction of the modal semantics for generic sentences in (7) and the meaning of the co-occurring modals as proposed by Kratzer (1977, 1981a, 1991). One central result of this investigation was that a simple combination of the two proposals does not capture the intuitive truth-conditions of generic sentences containing non-epistemic modal verbs. Crucially, the ordering source of the embedded modal depends on the world of evaluation rather than the generically accessible worlds. To capture this dependence, I formulated the following meaning postulates.

$$(8) \quad \begin{array}{l} \text{a.} \quad \forall w'[w \sim_{F,\square G} w' \rightarrow \mathbf{g}(w) = \mathbf{g}(w')] \\ \text{b.} \quad \forall w'[w \sim_{F,\diamond G} w' \rightarrow \mathbf{g}(w) = \mathbf{g}(w')] \end{array}$$

At the beginning of Chapter 4, I combined the results from Chapters 2 and 3. The resulting analyses for (1) and (2) are given in (9) and (10).

$$(9) \quad \forall w'[w \sim_{\text{bridal-couple} \ \& \ R(c_S), \diamond \text{expect-guests-to-pay-for-party}} w' \rightarrow \forall x[\text{bridal-couple}(x)(w') \ \& \ R(c_S)(x)(w') \ \& \ N_{\text{bridal-couple} \ \& \ R(c_S), \diamond \text{expect-guests-to-pay-for-party}}(w')(\langle x, w' \rangle) \rightarrow \neg \exists w'' \in O(\mathbf{f}, \mathbf{g}, w')[\text{expect-the-guests-to-pay-for-party}(x)(w'')]]]$$

$$(10) \quad \forall w'[w \sim_{\text{team} \ \& \ R(c_S), \square \text{want-to-win-more-than-opponent}} w' \rightarrow \forall x[\text{team}(x)(w') \ \& \ R(c_A)(x)(w') \ \& \ N_{\text{team} \ \& \ R(c_S), \square \text{want-to-win-more-than-opponent}}(w')(\langle x, w' \rangle) \rightarrow \forall w'' \in O(\mathbf{f}, \mathbf{g}, w')[\text{want-to-win-more-than-opponent}(x)(w'')]]]$$

Based on the discussion of the problematic aspects of the unified account at the end of Chapter 2, the predictions of the combined account were determined. I concluded that the assumption that these pronouns contribute descriptive content to the truth-conditions of their containing sentences is at the heart of all problems that arise for the account. Since the descriptive content is the core of the unified account (it links the impersonal and the referential uses), I dropped the goal of proposing a unified account for the two uses. Instead, I decided to focus on the pragmatic effects observed for the

<sup>4</sup>Note that this scope ordering was already implicitly assumed in the analysis given in (6).

impersonal uses. Formally, the aim was to give an adequate account for the impersonal uses that captures these effects.

Based on the discussion in Chapter 1 and observations in Moltmann (2010a,b) and Zifonun (2000), I proposed that the impersonal uses of *ich* and *du* trigger conventional implicatures that contribute not-at-issue content. This not-at-issue content then induces the observable speaker-oriented and the participant-oriented effects. The notion of not-at-issue content that is adopted is taken from the literature following Potts (2005).

In the last part of Chapter 4, I proposed a novel indefinite account for the impersonal uses of personal and impersonal pronouns. The contribution of the pronouns to the truth-conditions of a sentence is assumed to be just a free individual variable. The complexity of the meaning of the impersonal uses is found at the not-at-issue level. In addition to the free variable, the impersonal uses contribute conventionally implicated content. If this proposal is adopted, examples (1) and (2) are analyzed as (11) and (12)—ignoring for the moment the results of Chapter 3 on the modal interpretation of *Gen*.

- (11)  $\text{Gen}[x;](\text{bridal-couple}(x); \neg\Diamond\text{expect-the-guests-to-pay-for-party}(x))$  (=p)
- a. Speaker-oriented component:  
 $\text{BELIEVE}_w(c_S, \lambda w. \forall w' \in \text{MaxSim}_{\text{bridal-couple}(c_S), w} [N_{\text{bridal-couple}, \neg\Diamond\text{expect-the-guests-to-pay-for-party}}(w')(\langle c_S, w \rangle)])$
  - b. Participant-oriented component:  
 $\text{BELIEVE}_w(c_S, \text{all individuals that consider } ?p \text{ should accept that } p \ \& \ \text{there is an individual that does not accept that } p)$
- (12)  $\text{Gen}[x;](\text{team}(x); \Box\text{want-to-win-more-than-opponent}(x))$  (=p)
- a. Speaker-oriented component:  
 $\text{BELIEVE}_w(c_S, \lambda w. \forall w' \in \text{MaxSim}_{\text{team}(c_S), w} [N_{\text{team}, \Box\text{want-to-win-more-than-opponent}}(w')(\langle c_S, w \rangle)])$
  - b. Participant-oriented component:  
 $\text{BELIEVE}_w(c_S, \text{all individuals that consider } ?p \text{ should accept that } p) \ \& \ \text{INVITE}(c_S, c_A, \text{consider } ?p)$

Nothing more was said on the referential uses of *ich* and *du*. To account for them, I adopted the traditional account in Kaplan (1978 [1989]); however, nothing hinges on this choice.

In the final section of Chapter 4, two options for the connection between the referential uses and the impersonal uses were sketched, and their advantages and disadvantages were addressed. Neither of the two options was defended conclusively in the end.

## Conclusions on a unified, underspecified account

Given the conclusion in Chapter 4 regarding the unified account proposed in Chapter 2, one might wonder whether a unified account can in principle be proposed that adequately accounts for the referential and the impersonal uses of first and second person singular pronouns. A partial answer to this question, I believe, is strongly suggested by the problems and issues identified in Chapters 2 and 4: a unified indefinite account based on semantic underspecification cannot capture the complex semantic and pragmatic behavior of the referential and the impersonal readings of first and second person singular pronouns. Specifically, any account that assigns descriptive content to either the referential use or the impersonal use makes the same undesirable predictions as the account proposed in Chapter 2. This also includes the account proposed by Malamud (2006, 2007, 2012) for the impersonal reading of English second person (singular) *you*.

Are there other possible unified accounts to pursue that are less problematic? A first alternative option that one could pursue is an indefinite account in which the pronouns contribute only a free variable to the truth-conditions of a sentence in both the referential and the impersonal use. In this account, the referential use would have to be modelled as in the extension of the system in Heim and Kratzer (1998) discussed in Chapter 1: the potential values of the free variable contributed by referentially used pronouns would be restricted by presuppositional person features to the current speaker or the current addressee. For the impersonal uses, in turn, one would have to argue that the person features do not restrict the possible values of the variable, but somehow contribute their restriction to the CI content that is triggered by the pronouns.

Three arguments speak against this option. First, Kratzer (2009) already noted that the extension of the account proposed for third person pronouns in Heim and Kratzer (1998) to first and second person pronouns cannot capture their bound variable readings in examples such as (13).

- (13) *I'm the only one around here who can take care of my children.*  
(Kratzer 2009:188)

The possessive *my* in the relative clause is interpreted as covarying with the alternatives induced by *only*. Hence, the assumption that the referents of referentially used first and second person singular pronouns are restricted by presuppositional features cannot derive this variance; the features restrict the referent of *I* and *my* to the current speaker.

The second argument against this account is based on similar reasons to those that were given for (13) above. Specifically, the semantic contribution of the presuppositional morphosyntactic features must not restrict the values of the variable in the impersonal uses.

And lastly, the CI content that models the core of the pragmatic effects of the imper-

sonal uses is only contributed in the impersonal use. It is never present in the referential use. This type of optionality of occurrence on a not-at-issue level of meaning cannot be captured by a semantic account that aims to derive the two uses via underspecification on the truth-conditional level.

A second, entirely different route to account for the two uses in a unified manner—which was discarded in Chapter 2 for various reasons—would be to start from an underlying definite structure. However, in a definite account, it is hard, if not impossible, to capture the meaning of the impersonal uses. For instance, the definite accounts proposed in Safir (2004) and Alonso-Ovalle (2000) need to find an alternative way to capture the effect of quasi-universal quantification over individuals. This effect is usually captured by assuming that the generic operator binds the free variable contributed by an indefinite noun phrase. This formal mechanism is not easily reconstructed for definite expressions. Since *Gen* quantifies over possible worlds, a definite description denotes only one individual per world. This is too weak to capture the generality expressed by generic sentences. This conclusion is, of course, dependent on the possible worlds semantics framework in the form adopted in this thesis. However, a situation semantic framework such as the one adopted in Alonso-Ovalle (2000, 2002) does not provide notable advantages. Proposing a unified, definite account is always far from trivial—as the discussion of Alonso-Ovalle’s account in Chapter 2 shows. I will not sketch any other possible unified accounts based on underspecification; any other viable alternatives are left for further research.

But to sum up, the central problem that is faced by unified accounts is the task of unifying two expressions that differ in all of their relevant semantic and pragmatic aspects:

- *referential use*: a (directly) referential expression which, if at all, contributes only presupposed descriptive content
- *impersonal use*: a generically quantified expression for which the core of the contribution is conventionally implicated content

This discrepancy is the challenge that any unified account has to meet.

### **An entirely different alternative that could be pursued**

The proposals presented in Chapters 2 and 4 do not preserve the one-to-one relation between morphosyntactic form and meaning at the heart of most current work on the semantics of personal pronouns. In one such line of research, it is proposed that the meaning of personal pronouns is constructed from their morphosyntactic features (cf. Harley and Ritter 2002; Kratzer 2009). For the final account in Chapter 4, this is a necessary result of the assumptions (i) that the referential use of first and second person

singular pronouns is directly referential, and (ii) that the impersonal use is independent from the referential use, i.e. it is not a “special case” of this use.

To show that the two uses are truly independent, an analysis was discussed in Chapter 1 that leaves the semantics of the pronouns untouched, and assumes that the impersonal uses arise from the other, co-occurring material: sentences containing first or second person pronouns that appear to be used impersonally are counterfactual statements about the current speaker or the current addressee, respectively. Even though this account leaves the pronouns untouched, the account is ultimately undesirable since it makes false predictions regarding the data.

As shown in Chapter 1, sentences containing impersonally used first and second person singular pronouns are generic sentences. They express generalizations that share all of the characteristic properties of “ordinary” generic sentences. From this point of view, it seems to be a fair assumption that impersonally interpreted personal pronouns are indefinite expressions that behave just like indefinite noun phrases in generic sentences. However, instead of analyzing impersonally interpreted personal pronouns as Heimian indefinites that introduce a new individual variable, a different route could be pursued that is similar in spirit to the analysis as counterfactuals: since the central requirement to derive a generic sentence meaning with quasi-universal quantification over individuals is that the generic operator can bind some variable which induces variation over individuals, one could ask which variables or parameters occur in the standard accounts for referentially used first and second person singular pronouns, and argue that *Gen* binds one of them.

In what follows, I briefly introduce and discuss the idea that *Gen* can bind the context parameter proposed in Kaplan (1978 [1989]). To formalize this idea, assume that the meaning for first and second person pronouns is the standard context-dependent, directly referential meaning given in (14). Furthermore, the context parameter  $c$  is the quintupel  $c = \langle c_S, c_A, c_T, c_L, c_W \rangle$ .

- (14) a.  $\llbracket ich/I \rrbracket^c = c_S$   
 b.  $\llbracket du/you \rrbracket^c = c_A$

Since (unbound) referentially used first and second person singular pronouns in English always denote the current speaker or addressee—even in the contents of reported speech and attitude ascriptions—Kaplan argues that the context parameter is unshiftable, or more generally unbindable. This assumption has been shown to be false in Schlenker (2003), Anand and Nevins (2004), Anand (2006), and subsequent work for languages other than English. It is, therefore, fair to assume that the impersonal uses arise from a manipulation of the context parameter. This idea is briefly investigated and evaluated in the following paragraphs.

Adopting an idea in Percus (2011), I introduce context variables into the formal

system which may be manipulated by certain operators, similarly to explicit world variables. In a system of this kind, it can be assumed that the impersonal interpretations arise when the generic operator *Gen* binds the context variable of the sentence. This induces universal quantification over contexts and worlds.<sup>5</sup> Quasi-universal quantification over individuals is expressed indirectly by varying those context coordinates that are relevant for the interpretation of a given indexical pronoun. Example (15) provides the general schema underlying this idea.

- (15) a.  $\text{Gen}[c;](\phi[c_S];\psi[c_S])$  (impersonal 1st sg)  
 b.  $\text{Gen}[c;](\phi[c_A];\psi[c_A])$  (impersonal 2nd sg)

For a more detailed analysis, the modal account proposed in Drewery (1998) could be adapted to allow *Gen* to bind context variables. This adaptation leads to the two schemata in (16-a) and (16-b) for (15-a) and (15-b), respectively.

- (16) a.  $\forall w'[w' \sim_{F,G} w \rightarrow \forall c'[F(c'_S)(w') \ \& \ N_{F,G}(w)(\langle c'_S, w' \rangle) \rightarrow G(c'_S)(w')]]$   
 b.  $\forall w'[w' \sim_{F,G} w \rightarrow \forall c'[F(c'_A)(w') \ \& \ N_{F,G}(w)(\langle c'_A, w' \rangle) \rightarrow G(c'_A)(w')]]$

In the formulas in (16), the generic operator quantifies over all contexts  $c'$  for which the speaker-element  $c'_S$  / the addressee-element  $c'_A$  is a relevantly non-exceptional  $F$  with respect to being  $G$ .

Since (16) simply extends the proposal for *Gen* in Drewery (1998) to be sensitive to an additional type of bindable variable, this formal account derives all of the generalizations that are expressible with impersonally used first and second person pronouns, and that have been derivable with the original account. The only additional requirement that needs to be placed on the range of values for  $c'_S$  and  $c'_A$  is given in (17).

- (17) a.  $\bigcup_{c' \in C} \{c'_S\} = \{x : x \in D_e \ \& \ x \text{ is animate}\}$   
 b.  $\bigcup_{c' \in C} \{c'_A\} = \{x : x \in D_e \ \& \ x \text{ is animate}\}$

That is, the sets of all potential speakers and addressees has to exhaust the subset of the discourse domain that contains all animate individuals (cf. Chapter 1).

In an account along these lines, the meaning of *ich* and *du* does not vary for the referential and impersonal uses. In fact, the distinction between the two uses is not reflected in the pronominal meaning, at all. The distinction is the result of an ambiguity of *Gen*.

Malamud (2006) discusses and dismisses a similar account to the one sketched above. Based on her discussion, I briefly introduce four issues that arise for an analysis of the impersonal uses in terms of quantification over contexts.

<sup>5</sup>In fact, since the context parameter contains the world of utterance as a coordinate, universal quantification over contexts also induces universal quantification over worlds. Therefore, one could assume that *Gen* always only quantifies over contexts.

First—as stated above—one has to assume that the generic operator is ambiguous between (i) the standard operator that binds world, individual, and situation variables, and (ii) the operator formalized above, which also binds context variables. This ambiguity is crucial, and has to be explored in detail since first and second person singular pronouns may occur in generic sentences without being used impersonally, see (18).

- (18) a. *Ich esse Brot mit Butter und Marmelade zum Frühstück.*  
 I eat bread with butter and jam to-the breakfast  
 ‘For breakfast, I eat bread with butter and jam.’
- b. *Du schaust abends Serien, oder?*  
 you watch in-the-evening TV-shows or  
 ‘You watch TV shows in the evening, don’t you?’

There are various possibilities to deal with this ambiguity. One possibility is to argue that which variables are bound by the generic operator is determined contextually. Another possibility is to introduce an operator which abstracts over the context variable to make it accessible to *Gen*—similar to operators that were proposed to account for shifted indexicals or *de se* pronouns (cf. Percus 2011). As a result, *Gen* has to be assumed to unselectively bind all of the variables abstracted over at sentence level. One last possibility to account for the behavior of impersonal uses is to introduce features at the level of morphosyntax to establish an agreement relation between *Gen* and impersonally used personal pronouns. This agreement relation then triggers quantification over contexts.<sup>6</sup>

A second issue for this type of account is that using the speaker and addressee coordinates to capture quasi-universal quantification over individuals does not suffice to derive the impersonal uses’ pragmatic effects. The main question that has to be answered is: How can it be ensured that the pragmatic effects arise only when the speaker and addressee coordinates are associated with a context variable that is bound by a generic operator? For the account sketched above, the introduction of the additional not-at-issue content in the impersonal use could be modelled by an operator that adds the pragmatic components only in case the context variable is bound. This issue was addressed in a similar form in the previous subsection, where I discussed an idea for unifying the referential and impersonal uses in a different manner.

The third issue touches on the motivation behind Kaplanian contexts. By making the context variables accessible to the generic operator *Gen*, the motivation behind contexts as (potential) speech situations, in my opinion, is lost. Contrary to other operators that have been proposed to act as context shifters, e.g. propositional attitudes and verbs of saying, the meaning of *Gen* cannot be seen as involving speech situations of relevantly non-exceptional individuals (cf. Malamud 2006). A possible reply to this worry is that

<sup>6</sup>D’Alessandro and Alexiadou (2002) propose a similar agreement mechanism for impersonal pronouns.

a similar operationalization of a parameter that intuitively models the connection of an utterance to the discourse context has been implemented in the case of the variable assignment  $g$ . The variable assignment is now standardly used to model abstraction over individual variables, which is needed e.g. to account for variable binding (cf. Heim and Kratzer 1998).

The fourth issue concerns a well-known problem that arises when modelling quantificational variability effects. In quantificational variability interpretations the adverbs intuitively do not quantify over speech contexts, but over individuals (cf. Lewis 1975, Malamud 2006). If adverbs of quantification were to quantify over contexts, though, one may run into the same counting problems observed for situation based accounts: in general, there is more than one potential speech context for each individual. In fact, if the conceptual link to potential speech situations is given up, there are infinitely many contexts containing the same “speaker” or “addressee” due to the unrestricted variation over times, places, and worlds.

In contrast to these issues, an account based on quantification over contexts has the advantage that reference to the utterance context is blocked. Hence, it is predicted that no referential use of a first or second person pronoun should be able to co-occur with the impersonal uses. As shown in the data discussion in Chapter 1, this prediction is mostly borne out. But it is not a hard and fast rule—as one would expect given the account sketched above—since possessives seem to be possible exceptions. Hence, the predictions made by assuming quantification over contexts might be too strong, after all.

A more detailed investigation of this alternative account, in addition to the decision whether it is to be preferred over the account presented in Chapter 4 is left for further research. I count it among the bigger open issues that remain.

## Open issues and directions for further research

The discussions in the 1–4 and in the appendices left several issues unaddressed while others could not be answered in a satisfactory manner. The following points illustrate possibilities for further research. All of them cover either aspects of the impersonal uses that were not addressed so far, or new directions regarding other topics broached in this thesis.

**First**, research on the impersonal uses of personal pronouns would benefit immensely from a detailed, cross-linguistic study of the semantic and pragmatic properties of impersonally used pronouns in different languages. It was briefly mentioned in the Introduction that the phenomenon of impersonally interpreted second person singular pronouns is attested for a large number of languages. A detailed comparison of languages among and across language families would show which of the properties observed for *ich* and *du* are idiosyncratic for German, and which are universal properties

of impersonal uses. In addition, the interaction of impersonal uses with other phenomena might provide further insights on the meaning components of these uses. For these investigations I believe e.g. evidentials (cf. Rojas 2011), discourse particles (cf. Appendix A2), and propositional attitudes to be of interest.

**Second**, I decided to leave aside impersonal uses that occur in interrogative and imperative sentences in Chapter 1. The different, intensional sentential contexts associated with these two sentence types may reveal additional aspects for the German data, as well as the impersonal uses in general.

**Third**, if it is assumed that the impersonal and referential uses of personal pronouns do not arise from the same, underspecified meaning, the question arises how the two uses are connected. At the end of Chapter 4, two possible solutions, i.e. a pragmatic shifting process and lexical ambiguity, were briefly discussed as options to link the referential use with the impersonal use. A more detailed discussion of this issue, possibly in connection with other phenomena showing different, apparently incompatible uses, might provide new insights on the interplay between semantics and pragmatics. Three of these types of expressions were mentioned in the Introduction: (i) demonstratives, (ii) proper names, and (iii) impersonal pronouns.

**Fourth**, the supporting and blocking effects of co-occurring material have been left aside so far. In Chapter 1, I argued that they should be seen as an issue for generic sentences in general: the effect of additional frame-setting and qualifying material seems to be connected to the question of when a sentence is interpreted as a generic or an episodic statement. The choice between generic and episodic, in turn, is connected to various grammatical factors, e.g. aspectual specification, as well as world knowledge. I believe that this is an interesting, and as far as I am aware ill-understood topic.

**Fifth**, multiple occurrences of impersonally used *ich*, *du*, and *man* present a problem for the accounts presented in Chapters 2 and 4 if no “global” process is assumed that links all of the occurrences in the same sentence. Intuitively, every occurrence of a given pronoun that is interpreted impersonally contributes the same variable. If this synchronization at the formal level is not ensured, it is predicted that e.g. the second occurrence in (19) can be interpreted independently from the one in the antecedent.

- (19) *Wenn ich als Gewerbetreibender etwas kaufe, kann ich Vorsteuer geltend machen.*  
 if I as trader something buy can I prepaid-tax  
 lay-a-claim  
 ‘If a trader buys something, he can lay a claim on prepaid tax.’<sup>7</sup>

Furthermore, even if a sentence contains more than one occurrence of an impersonally used pronoun, the CI content is only contributed once. Consider (19) and (20).

<sup>7</sup><http://de.answers.yahoo.com/question/index?qid=20091023064023AAD6nz>

- (20) *Du* *musst* *als* *Künstler* *ja* *auch* *mit* ***deinen*** *Gefühlen* *haushalten*.  
 you must as artist PRT also with your emotions economize  
 ‘An artist has to be economical with his emotions.’<sup>8</sup>

One possible way to solve this issue is to treat only the first pronoun in a given sentence as a true impersonal use, and analyze all further occurrences as bound pronouns similar to Kratzer’s (2009) proposal for “fake indexicals”, cf. Chapter 1. If a similar feature transmission procedure is assumed for bound “impersonal uses”, the features that are inherited from original impersonal uses are not interpreted; these inherited features would also only have an influence on the phonological form of the bound pronouns. However, Kratzer (2009) does not discuss donkey or E-type pronouns, and if/how her feature transmission procedure could be extended to these cases.

**Sixth**, various issues regarding the semantics of generic sentences and modals needed to be left for further research that are independent from the discussion of the impersonal uses. These were, among others, (i) the issue of contextual restrictions for the generic operator *Gen*, (ii) the unavailability for the scope order  $\text{MOD} > \text{Gen}$  for non-epistemic modal flavors, and (iii) the general question of conditional generic sentences.

As discussed in Chapter 3, the question of whether the generic operator can be contextually restricted divides the field into two camps. One group of researchers argue that the generic operator differs from nominal quantifiers with respect to contextual restriction (cf. Condoravdi 1994; Krifka et al. 1995). In contrast, the other group tries to show that contextual restriction is indeed possible (cf. Drewery 1998; Greenberg 2007). While discussing this literature, I briefly suggested that, *pace* Drewery and Greenberg, true contextual restriction is unavailable, but that the generic operator may be sensitive to frame setting in the previous discourse. The conditions on frame setting, and the difference between bare plurals in frame set generic sentences in these uses and Condoravdi’s third use (cf. Condoravdi 1994) are still to be investigated.

In Appendix A3, the question of conditional generics was briefly addressed. An extension of the account for generic sentences with and without overt modals to conditional generic sentences was proposed, and the connection between conditional generics, doubly modalized generics, and quantified conditionals was highlighted. However, a comprehensive account of conditional generics, as well as an evaluation of the proposed extension still need to be worked out.

**Seventh**, the analysis of generic sentences that do not contain an overt modal, but are interpreted like corresponding generic sentences containing an overt modal is still an open question. The correspondence is illustrated in (21).

<sup>8</sup><http://www.france-delon.de/buch4.htm>

- (21) a. *Countries with common borders share their resources.*  
 (Drewery 1998:93)  
 b. *Countries with common borders must share their resources.*

One interesting aspect of these sentences is that they can be used to enforce a rule or to create new obligations for the addressee, as in (22).

**Scenario:** The mother wants her daughter to tidy her room.

- (22) *Ein braves Mädchen räumt jetzt sein Zimmer auf.*  
 a good girl cleans now her room up  
 ‘A good girl cleans up her room now.’

I believe that a detailed investigation of these uses will open up interesting connections between the theory of speech acts (Austin 1962; Searle 1969) and the semantics of modality, and will tie in with current discussions on this connection in Kaufmann (2012) and Condoravdi and Lauer (2011).

**Lastly**, the investigation on the different functions of German nominal *als*-phrases in Appendix A1 only touched upon the various issues that need to be explored to give a comprehensive account of German *als*-phrases and English *as*-phrases. Further directions for research include a comparison of the behavior of *als*-phrases to the behavior of adverbials and secondary predicates.

# Appendix

## A1 German nominal *als*-phrases

### A1.1 Data discussion

In the data discussion on the impersonal uses of *ich*, *du*, and *man* in Chapter 1, German nominal *als*-phrases were listed among optionally co-occurring material that has a supporting effect on the availability of the impersonal uses. Their contribution to the interpretation of generic sentences containing impersonally used personal pronouns is a property that seems to specify for which group of individuals the general statement is made. Consider (1).

- (1) *Ich kann doch als Brautpaar nicht von meinen Gästen erwarten, dass sie mir quasi die Feier finanzieren!*  
I can PRT as bridal-couple not from my guests expect that  
they me more-or-less the party finance  
'Bridal couples can't expect their guests to more or less pay for the party!'<sup>1</sup>

In example (1), the *als*-phrase *als Brautpaar* (Engl. 'as a bridal couple') restricts the generalization to bridal couples. That is, the denotation of impersonally used *ich*—whatever it may be—seems to be connected to the denotation of the *als*-phrase. This section of the Appendix investigates whether the *als*-phrase restricts the set of individuals that are quasi-universally quantified over, or whether it simply makes explicit one of the properties that individuals in this set share.

In the following subsections, I first provide an overview of the behavior of nominal *als*-phrases based on recent descriptive analyses of German, specifically the work in Flaate (2007) and Zifonun (1998). This discussion is supplemented by a comparison between *als*-phrases and English *as*-phrases. Based on these results, I propose a simplified semantics for German *als*-phrases, which is inspired by the analyses for English *as*-phrases in Jäger (2001, 2003) and Szabo (2003), but which does not aim to capture all aspects of *als*-phrases.<sup>2</sup> Furthermore, I will provide a first descriptive analysis of

<sup>1</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

<sup>2</sup>Formal semantic analyses of English *as*-phrases can be divided into three classes: (i) analyses as term restrictors (Landman89), (ii) analyses as additional predication (Jäger 2001, 2003; Szabo 2003),

the interaction of *als*-phrases with quantificational expressions, and of their behavior in generic sentences.

German nominal *als*-phrases consist of the expression *als* followed by either a bare noun or full noun phrase, the “nominal complement” of *als*, which can be additionally modified by adjectives or relative clauses. This is illustrated in (2).<sup>3,4</sup>

- (2) a. *als (kleine) Katze (die gestreichelt wird)*  
 as small cat that petted gets  
 ‘as (small) cat (that gets petted)’
- b. *als eine/die (kleine) Katze (die gestreichelt wird)*  
 as a/the small cat that petted gets  
 ‘as a/the (small) cat (that gets petted)’

In the descriptive literature, a number of functions and uses of German nominal *als*-phrases are distinguished which motivate various syntactic and/or semantic classifications (cf. Flaate 2007 for an overview). Zifonun (1998) and Flaate (2007), for instance, distinguish four uses of nominal *als*-phrases:

1. a “use” in which the *als*-phrase is selected by the main predicate in the sentence
2. an adnominal use
3. a use in which the *als*-phrase behaves like a verb-modifying adverbial<sup>5</sup>
4. a use in which the *als*-phrase behaves like a sentence adverbial

Flaate (2007) and Zifonun (1998) motivate their three classes of non-argument uses by syntactic, as well as semantic considerations, some of which will be addressed below.

Example (3) illustrates an *als*-phrase in an argument position selected by the verb *betrachten* (Engl. ‘regard’).

- (3) *Peter betrachtet Maria als Freundin.*  
 Peter regard Maria as friend  
 ‘Peter regards Maria as his friend.’

There is a number of verbs in German that select for a nominal *als*-phrase as a complement, e.g. *bezeichnen* (Engl. ‘refer’), *gelten* (Engl. ‘be regarded’), *dienen* (Engl. ‘serve’), and *halten* (Engl. ‘perceive’). Note that many of the corresponding English verbs also select for *as*-phrases.

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and (iii) mixed analyses (Asher 2006). I will not present these accounts and their predictions for German *als*-phrases in detail since this goes beyond the scope of this thesis.

<sup>3</sup>There is no consensus in the literature with respect to the word class of *als* in nominal *als*-phrases. The two most prominent positions are (i) that *als* is a special kind of preposition, or (ii) that it is a complementizer on the phrasal level (cf. Zifonun 1998 and Flaate 2007).

<sup>4</sup>*Als* also functions as a complementizer, and as the German counterpart of the English comparative *than*. Whether the other functions of *als* and the *als* taking nominal complements are two uses of the same lexical item, or distinct lexical elements will not be discussed at this point, and is left for further research.

<sup>5</sup>Zifonun (1998) calls this the use as “verbbezogenes Adverbial”.

For the second class, two subclasses of adnominal uses need to be distinguished. The two distinct adnominal uses are illustrated in (4).

- (4) a. **Peter als fleißiger Bauer verdient 50.000 Euro.**  
 Peter as hard-working farmer earns 50.000 euros  
 ‘As a hard-working farmer, Peter earns 50.000 euros.’
- b. **Peters Ruf als fleißiger Bauer ist überall bekannt.**  
 Peter’s reputation as hard-working farmer is everywhere known  
 ‘Peter’s reputation as a hard-working farmer is known everywhere.’

In (4-a), the *als*-phrase is immediately adjacent to its “associated noun phrase”, *Peter*, and both form a constituent.<sup>6</sup> In this configuration, the *als*-phrase attributes the property denoted by the nominal complement to the “associated individual” referred to by the associated noun phrase. For instance, (4-a) conveys that Peter is a hard-working farmer. In (4-b), in contrast, the *als*-phrase is not immediately adjacent to its associated noun phrase, *Peter*, but to the noun *Ruf* (Engl. ‘reputation’). The associated noun phrase and the *als*-phrase both modify the noun phrase of which *Ruf* is the head. In this case, the property denoted by the nominal complement of *als* cannot be attributed directly to the associated individual. The relation between the *als*-phrase and the associated individual is mediated by the noun *Ruf*. For (4-b) this means that it is not claimed that Peter is a hard-working farmer, only that he has a reputation for being one—which may be based on misconceptions. The difference between (4-a) and (4-b) is also reflected in the English translations. In the following discussion, the second adnominal use is left aside since this type of *als*-phrases is, as far as I know, not found with the impersonal uses of *ich*, *du*, and *man*.

In the third and fourth class, the *als*-phrases are neither selected for by the matrix predicate, nor necessarily directly adjacent to their associated noun phrases. Hence, these *als*-phrases and their associated noun phrases do not form a constituent. The third and fourth class are illustrated in (5). Both examples are ambiguous between the verb-modifying adverbial-like use and the sentential adverbial-like use although there is a preference to interpret (5-a) as involving the former and (5-b) as involving the latter use.

- (5) a. **Als Bauer verdient Peter 50.000 Euro.**  
 as farmer earns Peter 50.000 euros
- b. **Peter verdient als Bauer 50.000 Euro.**  
 Peter earns as farmer 50.000 euros  
 Both examples: ‘As a farmer, Peter earns 50.000 euros.’

In the verb-modifying adverbial-like use, both sentences can be paraphrased as in (6).

<sup>6</sup>For V2 languages like German, placement in front of the finite verb in matrix clauses is a traditional constituency test.

- (6) *In seinem Job als Bauer verdient Peter 50.000 Euro.*  
 ‘In his job as a farmer, Peter earns 50.000 euros.’

Example (7) paraphrases the sentence adverbial-like use.

- (7) *Da Peter Bauer ist, verdient er 50.000 Euro.*  
 ‘Because Peter is a farmer, he earns 50.000 euros.’

In matrix clauses, adnominal and adverbial *als*-phrases can be distinguished in surface form in case the associated noun phrase stands in front of the finite verb in *Vorfeld* position. If the associated noun phrase occurs after the finite verb (i.e. in the *Mittelfeld*), adnominal and adverbial *als*-phrases may be indistinguishable, see (8).

- (8) *Dieses Jahr verdient **Peter als Bauer** 50.000 Euro.*  
 this year earns Peter as farmer 50.000 euros  
 ‘This year Peter as a farmer earns 50.000 euros.’

In (8), the associated noun phrase *Peter* and the *als*-phrase are placed after the finite verb but adjacent to each other. Therefore, the surface form of the sentence is compatible with the *als*-phrase being used both adnominally or like an adverbial.

Even though in (3)–(8) the associated noun phrases are always the subject, *als*-phrases can take any nominal constituent in the same clause as its associated noun phrase. *Als*-phrases are restricted neither with respect to the type of nominal constituent they associate with, nor with respect to the syntactic function of that constituent. This is illustrated in (9) for an associated nominal expression inside a prepositional phrase.

- (9) *Eine ehrliche Herzlichkeit, eine wirkliche Freude am Beruf und ein  
 a sincere friendliness a true enjoyment at-the job and a  
 gutes Miteinander sind **für Susanne als Chefin** sehr wichtig.  
 good cooperation are for Susanne as boss very important  
 ‘For Susanne, as the boss, sincere friendliness, true love for the job, and a  
 cooperative working environment are very important.’<sup>7</sup>*

An association between an *als*-phrase and a nominal expression is marked morphologically: the nominal complement and the associated nominal expression usually agree in number and case, although case agreement seems to be less strict (cf. Flaate 2007). In (10), the nominal complement of the *als*-phrase, *seine Freunde*, is marked as plural and accusative. Therefore, only the direct object of *einladen* (Engl. ‘to invite’), i.e. *Maria und Paul*, can be the associated nominal expression.

<sup>7</sup><http://www.wannenkopfhuette.de/huette/die-guten-geister-hoch-oben-aufm-berg.html>

- (10) *Peter lädt Maria und Paul als seine Freunde ein.*  
 Peter invites Maria and Paul as his friends.ACC-PL  
 ‘Peter invites Maria and Paul as his friends.’

Whenever the nominal complement is morphologically ambiguous, the *als*-phrase can in principle be associated with either of the different nominal constituents in the sentence that show a compatible morphological form. In this case, a sentence is ambiguous, see (11).

- (11) *Sie haben ihn als Studenten kennengelernt.*  
 they have him as student(s).ACC-SG/NOM-PL meet  
 Available: ‘As students, they met him.’ (subject)  
 Available: ‘They met him as a student.’ (object)  
 (Flaate 2007:63)

So far, the adnominal use and the two adverbial-like uses have only been distinguished by their syntactic properties. Their syntactic differences, though, also result in different semantic behavior. For instance, (i) they interact differently with verbs that express a change of location or state, (ii) they interact differently with intensional sentential operators, and (iii) they differ in their ability to “rescue” contradictory sentences.

The first point is observed in Zifonun (1998). Consider the two sentences in (12).

- (12) a. *Boris Becker als erster deutscher Wimbledon-Sieger verließ*  
 Boris Becker as first German Wimbledon-winner left  
*gestern um fünf den Centre Court.*  
 yesterday at five the Centre Court  
 ‘Yesterday at five PM, Boris Becker, the first German champion of Wimbledon, left the Centre Court.’
- b. *Boris Becker verließ gestern um fünf als erster deutscher*  
 Boris Becker left yesterday at five as first German  
*Wimbledon-Sieger den Centre Court.*  
 Wimbledon-winner the Centre Court  
 ‘Yesterday at five PM, Boris Becker left the Centre Court as the first German champion of Wimbledon.’ (Zifonun 1998:4)

In (12-b), the *als*-phrase, *als erster deutscher Wimbledon-Sieger*, is in an adverbial position, and the predicate expressed by the *als*-phrase, i.e. ‘being the first German champion of Wimbledon’, is connected to the event of leaving the Centre Court. It is understood that Boris Becker’s becoming the first German champion of Wimbledon happened between his stepping onto the Centre Court and leaving it at five. No such connection is necessarily understood for (12-a) with the adnominally used *als*-phrase. That is, Boris Becker’s becoming the first German champion may have happened at an earlier time.

The second point above concerns the interaction of *als*-phrases with intensional sentential operators in the same clause. Consider the examples in (13), which illustrate the interaction of the adnominal and adverbial-like uses with the subjunctive *würde* (Engl. ‘would’).

- (13) a. *Peter als Bauer würde 50.000 Euro verdienen.*  
Peter as farmer would 50.000 euros earn
- b. *Peter würde als Bauer 50.000 Euro verdienen.*  
Peter would as farmer 50.000 euros earn

In general, (13-a) and (13-b) are ambiguous. In the first reading, the *als*-phrase is interpreted as restricting the meaning of the subjunctive: The predication ‘Peter is a farmer’ expressed by the *als*-phrase and its associated nominal expression is added as an assumption to ‘Peter would earn 50.000 euros’ to express the meaning of the subjunctive conditional in (14).

- (14) *Wenn Peter ein Bauer wäre, würde er 50.000 Euro verdienen.*  
if Peter a farmer were, would he 50.000 euros earn  
‘If Peter were a farmer, he would earn 50.000 euros.’

In the second reading, ‘Peter is a farmer’ is not interpreted as an assumption under which the rest of the sentence is evaluated, but as an actual fact about Peter. This reading can be paraphrased as in (15).

- (15) Peter, who is a farmer, would earn 50.000 euros.

Sentences containing adnominally used and adverbial-like uses of *als*-phrases differ with respect to which of these two types of readings are understood when they are uttered out-of-the-blue: for adnominal *als*-phrases, the preferred interpretation is outside the scope of the subjunctive, whereas for adverbial *als*-phrases, the preferred interpretation is as a restriction on the subjunctive.<sup>8</sup>

The sentential context, the discourse context, and prior knowledge about the associated individual can affect which of the two readings is understood. For instance, if it is known that the *als*-phrase cannot apply to the associated individual, the restrictive reading is promoted, see (16).

- (16) a. *Peter als Frau würde wie seine Schwester aussehen.*  
Peter as woman would look like his sister
- b. *Peter würde als Frau wie seine Schwester aussehen.*  
Peter would as woman look like his sister

<sup>8</sup>The native speakers that I consulted accepted the adnominal use of *als*-phrases in the restrictive reading when only the adnominal use was presented, and they were asked whether they could interpret the sentence in this fashion. When they were presented both options, i.e. the *als*-phrase in adnominal and in adverbial position, they consistently preferred the *als*-phrase in adverbial position.

In (16), both sentences are interpreted as ‘If Peter were a woman, he would look like his sister’ since the non-restrictive reading would convey that Peter is a woman. In contrast, if it is known or suggested that the nominal complement applies to the associated individual, the non-restrictive reading is understood. See (17).<sup>9</sup>

- (17) a. *Peter als Mann würde 5.000 Euro mehr verdienen.*  
Peter as man would 5.000 euros more earn
- b. *Peter würde als Mann 5.000 Euro mehr verdienen.*  
Peter would as man 5.000 euros more earn
- Both preferred: ‘Peter, who is a man, would earn 5.000 euros more.’

Since Peter is assumed to be a man, both sentences are interpreted non-restrictively.

German *als*-phrases share the possibility to restrict the subjunctive with English *as*-phrases. Consider the following example and its paraphrase from Stump (1985).

- (18) a. *As a blonde, Mary might look something like Jane.*
- b. If she were a blonde, Mary might look something like Jane.
- (Stump 1985:88)

The subjunctive is not the only intensional operator for which the adnominal use and adverbial-like uses show different restriction behavior. The examples in (19) and (20) illustrate their interaction with the propositional attitude/modal verb *wollen* (Engl. ‘want’).

- (19) a. #*Peter als Frau will eine neue Liebe finden.*  
Peter as woman wants a new love find
- b. *Peter will als Frau eine neue Liebe finden.*  
Peter wants as woman a new love find
- (20) a. *Peter als Mann will sich einen Sportwagen kaufen.*  
Peter as man wants himself a sports-car buy
- b. #*Peter will sich als Mann einen Sportwagen kaufen.*  
Peter wants himself as man a sports-car buy

Note that when co-occurring with *wollen*, the adnominal uses are invariably non-restrictive while the adverbial-like uses are always interpreted restrictively. No ambiguity arises as in the case of the subjunctive. This suggests that the observed interaction also depends on the different intensional operators.

Another interesting semantic property, first observed for English *as*-phrases, also distinguishes adnominal and adverbial *als*-phrases. For English, it is observed that *as*-

<sup>9</sup>Note that it is perceived as pragmatically odd, and sometimes outright false to encode an actual, known fact as a hypothetical assumption in subjunctive conditionals. Hypothetically assuming a fact suggests that it is still possible that it does not actually hold.

phrases can be used to “rescue” contradictory sentences or texts of the form in (21-a) (cf. Landman 1989, Jäger 2001, 2003, Szabo 2003, Asher 2006).

- (21) a. #*Peter earns 50.000 euros, but he doesn't earn 50.000 euros.*  
 b. *Peter as a judge earns 50.000 euros, but he as a janitor doesn't earn 50.000 euros.*

The *as*-phrases in the “rescued” example (21-b) relativize the incompatible properties ascribed to Peter, i.e. *earning 50.000 euros* and *not earning 50.000 euros*, to two different roles, i.e. jobs, performed by Peter. By this relativization, the contradiction arising in (21-a) is obviated.

For German, the two adverbial uses of *als*-phrases also show the “rescue property”. See (22).

- (22) a. #*Peter verdient 50.000 Euro, aber er verdient nicht 50.000 Euro.*  
 Peter earns 50.000 euros but he earns not 50.000 euros  
 ‘Peter earns 50.000 euros, but he doesn’t earn 50.000 euros.’  
 b. *Peter verdient als Richter 50.000 Euro, aber als Hausmeister verdient*  
 Peter earns as judge 50.000 euros but as janitor earns  
*er nicht 50.000 Euro.*  
 he not 50.000 euros  
 ‘Peter earns 50.000 euros as a judge, but he doesn’t earn 50.000 euros as a janitor.’  
 c. *Als Richter verdient Peter 50.000 Euro, aber als Hausmeister verdient*  
 as judge earns Peter 50.000 euros but as janitor earns  
*er nicht 50.000 Euro.*  
 he not 50.000 euros  
 ‘As a judge, Peter earns 50.000 euros, but as a janitor he doesn’t earn 50.000 euros.’

Adnominally used *als*-phrases as in (23), on the other hand, only marginally improve the previously contradictory sentence in (22-a). Compared to the sentences in (22) it sounds odd.

- (23) ??*Peter als Richter verdient 50.000 Euro, aber er als Hausmeister verdient*  
 Peter as judge earns 50.000 euros but he as janitor earns  
*nicht 50.000 Euro.*  
 not 50.000 euros  
 ‘Peter as a judge earns 50.000 euros, but he as a janitor doesn’t earn 50.000 euros.’

The cases in which adnominal and adverbial-like uses show different semantic behavior do not provide a means, though, to tell apart Zifonun’s verb-modifying adverbial use from the sentence adverbial use. However, all the classes differ in their behavior

with respect to (sentential) negation, *nicht* (Engl. ‘not’). *Als*-phrases in adnominal position are always outside the scope of negation. For instance, in (24) only Peter’s earning 50.000 euros is negated. The sentence still conveys that Peter is a farmer.

- (24) *Peter als Bauer verdient nicht 50.000 Euro.*  
 Peter as farmer earns not 50.000 euros  
 ‘Peter, a farmer, does not earn 50.000 euros.’

The two adverbial-like uses differ with respect to whether they may occur in the scope of negation, depending on the syntactic position of the *als*-phrase. Compare the sentences in (25).

- (25) a. *Als Bauer verdient Peter nicht 50.000 Euro.*  
 as farmer earns Peter not 50.000 euros  
 ‘As a farmer, Peter does not earn 50.000 euros.’  
 b. *Peter verdient nicht als Bauer 50.000 Euro.*  
 Peter earns not as farmer 50.000 euros  
 ‘Peter earns 50.000 euros, but not as a farmer.’  
 c. *Peter verdient als Bauer nicht 50.000 Euro.*  
 Peter earns as farmer not 50.000 euros  
 ‘As a farmer, Peter does not earn 50.000 euros.’

When the *als*-phrase is in preverbal position, whether or not it is interpreted outside the scope of negation depends on the specific stress pattern that is used. If (25-a) is read with neutral stress, only Peter’s earning 50.000 euros is negated; that Peter is a farmer is not denied. In contrast, if the nominal complement and the negation are stressed with a bridge contour, the *als*-phrase is interpreted in the scope of negation, and it is also denied that Peter is a farmer. The interpretation of (25-a) can be either of the two adverbial-like uses. If *Bauer* is stressed, the verb-modifying adverbial-like use is preferred; if it is not stressed, i.e. with neutral intonation, the sentence adverbial-like use is preferred. Example (25-b), in contrast, can only be interpreted as the negation scoping over the *als*-phrase. The sentence states that Peter earns 50.000 euros, but not as a farmer. Note, however, that it is not explicitly denied that Peter is a farmer. If Peter has two jobs, for example, it is expressed that this particular income is not related to his job as a farmer. For this sentence, the only possible interpretation for the *als*-phrase is the verb-modifying adverbial-like use. Example (25-c) is again interpreted with the *als*-phrase outside the scope of negation. As for example (25-a), only Peter’s earning 50.000 euros is negated, and also depending on whether *Bauer* is stressed, either of the two adverbial-like uses are understood.

Zifonun (1998) observes that the alternation between the use as a verb-modifying adverbial and as a sentence adverbial illustrated in (25-b) and (25-c) (when *Bauer* is unstressed) is also observable for some adverbs in German, e.g. *sicher* (Engl. ‘securely, certainly’). *Sicher* can be interpreted as a manner adverbial, meaning ‘securely’, and

alternatively as a sentence adverbial, meaning ‘certainly’ or ‘it is certain, that’. Depending on the relative position of the adverbial regarding sentential negation, one of the two interpretations is preferred over the other. This is illustrated in (26).

- (26) a. *Er spricht nicht sicher.*  
 he talks not securely  
 ‘He does not talk securely.’ (manner adverbial)
- b. *Er spricht sicher nicht.*  
 he talks certainly not  
 ‘Certainly, he does not talk.’ (sentence adverbial)
- (adapted from Zifonun 1998:14)

In general, the observations made for adverbial *als*-phrases with an unstressed nominal complement above can be summed up as: (i) *als*-phrases that occupy the preverbal position in matrix clauses are interpreted like a sentence adverbial, (ii) in embedded clauses and in postverbal position in matrix clauses, *als*-phrases are ambiguous between the sentence adverbial and verb-modifying adverbial use, and (iii) only verb-modifying adverbial-like uses can occur in the scope of negation. Any *als*-phrase in an adverbial position is usually interpreted as a verb-modifying adverbial-like use when the nominal complement is stressed. In ambiguous positions, the discourse context and the sentential context (e.g. the co-occurring predicate) help to disambiguate the use of the *als*-phrases. For instance, if (27) is uttered out-of-the-blue, the verb-modifying adverbial-like use of the *als*-phrase is dispreferred, and only the sentence adverbial-like use is understood.

- (27) *Sie war als Kind nicht besonders hübsch.*  
 she was as child not exceptionally pretty  
 Preferred: ‘When she was a child, she was not exceptionally pretty.’(sentence)  
 Dispreferred: ‘In her role as a child, she was not exceptionally pretty.’ (verb-modifying)  
 (Zifonun 1998:14)

In an appropriate context, e.g. if the topic of conversation is a play in which the associated individual performed, the dispreferred reading may become the preferred one.

To sum up, three uses of *als*-phrases need to be distinguished: (i) the adnominal use, (ii) an adverbial use with verb-modifying function, and (iii) an adverbial use with a function like a sentence adverbial. These uses can be distinguished with respect to their preferred syntactic positions and their interactions with co-occurring material.

## A1.2 The semantic contribution of *als*-phrases

Abstracting from the position-specific differences discussed in the previous subsection, Zifonun (1998) argues for a common functional core for all non-argument uses of German *als*-phrases. She suggests that *als*-phrases have a predicational structure, and their central function is to attribute the property denoted by the nominal complement to the referent of their associated noun phrase. Any additional contributions that affect or interact with other material in the sentence differ for each of the three uses.

In adnominal position, an *als*-phrase only characterizes the referent of its associated noun phrase further. Zifonun compares the contribution of this use to the contribution of non-restrictive relative clauses, but adds that adnominal *als*-phrases have an additional property: they mark the property denoted by their nominal complement as particularly relevant for the plausibility of the truth of the statement.

- (28) a. *Herr Schulze als erfahrener Lehrer weiß sowas.*  
 Mr Schulze as experienced teacher knows something-like-this  
 (Zifonun 1998:2)
- b. *Herr Schulze, der (ja) ein erfahrener Lehrer ist, weiß sowas.*  
 Mr Schulze who PRT an experienced teacher is knows something-like-this  
 (Zifonun 1998:7)

Both sentences in (28) state that Herr Schulze is an experienced teacher, and that he knows certain things of interest. In addition, only the adnominally used *als*-phrase also signals that Herr Schulze's being a teacher are the speaker's grounds for assuming that he has that knowledge.

For the verb-modifying adverbial-like use, Zifonun argues that in addition to contributing the common core meaning, the *als*-phrase modifies the denotation of the verb phrase: the *als*-phrase further specifies the role or function of the associated noun phrase as one of the arguments of the matrix predicate.

- (29) *Sie ging als Entwicklungshelferin nach Afrika.*  
 she went as development-worker to Africa  
 'She went to Africa (in her job) as development worker.'  
 (Zifonun 1998:14)

Zifonun sees the observation discussed in the previous subsection, i.e. with verbs denoting a change of state, *als*-phrases are associated with only one of the states, as evidence for the argument status of the *als*-phrases in this use. Hence, in principle, one should be able to find sentences containing two *als*-phrases that are each associated with one of the two states of a change of state verb. This is illustrated in (30).

- (30) *Er betrat den Platz als Favorit und verließ ihn als Gewinner.*  
 he entered the court as favourite and left it as winner  
 ‘He entered the court as the favorite, and left it as the winner.’

Zifonun argues that in general, the verb-modifying adverbial-like uses specify or qualify a participant in the event described by the predicate.

In the sentence adverbial use, in contrast, the *als*-phrase modifies the whole sentence. It introduces a frame, condition, or setting in which the sentence is interpreted. Specifically, Zifonun observes that the predication expressed by the *als*-phrase may stand in a temporal, causal, or conditional relation to the matrix predicate. Which of these relations holds between the two predications is determined pragmatically. Compare (31) and (32).

- (31) *Sie war als Kind nicht besonders hübsch.*  
 she was as child not exceptionally pretty  
 ‘When she was a child, she was not exceptionally pretty.’ (temporal)  
 (Zifonun 1998:14)

- (32) *Als Entwicklungshelferin ging sie nach Afrika.*  
 as development-worker went she to Africa  
 ‘When/because she was a development worker, she went to Africa.’  
 (temporal or causal)  
 (Zifonun 1998:14)

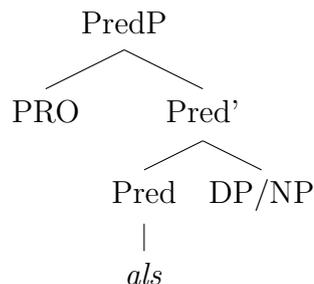
The conditional relation is exemplified by those examples in which an *als*-phrase interacts with the subjunctive. Consider example (33).

- (33) *Peter würde als Frau wie seine Schwester aussehen.*  
 Peter would as woman look like his sister  
 ‘If Peter were a woman, he would look like his sister.’ (conditional)

Based on this data discussion, I now present a first, very simplified semantic analysis for *als*-phrases, which is designed to capture only the predicational core of the three uses and their presuppositional behavior.

Building on Zifonun’s analysis, Flaate (2007) analyzes adnominal and adverbial *als*-phrases as predicational phrases which either adjoin to the associated noun phrase or the matrix verb phrase, respectively. She proposes the syntactic structure in (34).

(34)



(Flaate 2007:219)

The silent PRO in subject position is controlled by the associated noun phrase, which creates a referential dependency between the two expressions (cf. Chierchia 1989).

As a starting point, I adopt Flaate's syntactic structure in (34), and as a first step into the direction of a formal analysis of *als*-phrases, I suggest that they contribute properties. This captures Zifonun's proposal for the common functional core of the non-argument uses, and predicts that an *als*-phrase like *als Bauer* is interpreted as in (35).

$$(35) \quad \llbracket \textit{als Bauer} \rrbracket^{c,g} = \lambda x. \lambda w. \textit{farmer}(x)(w)$$

For this predicational meaning to arise on the basis of the syntactic structure above, three basic assumptions are needed.

First, the nominal complement is a bare noun:<sup>10</sup>

$$(36) \quad \llbracket \textit{Bauer} \rrbracket^{c,g} = \lambda x. \lambda w. \textit{farmer}(x)(w)$$

Second, *als* is interpreted in analogy to the analysis of the copula in Heim and Kratzer (1998). Specifically, *als* is an identity function on properties, see (37).

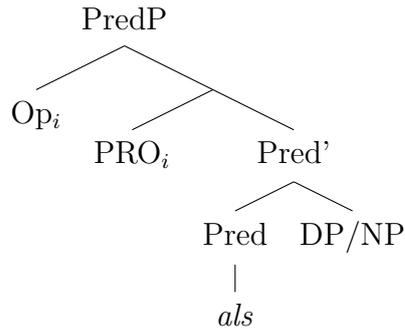
$$(37) \quad \llbracket \textit{als} \rrbracket^{c,g} = \lambda P_{\langle e, st \rangle}. P$$

This is in line with the work in Stump (1985) and Jäger (2001, 2003), who assume that English *as* and the copula have the same predicational function.

Third, PRO is interpreted as a variable which is obligatorily bound by a silent operator,  $Op_i$  (cf. Chierchia 1989).

<sup>10</sup>For the sake of simplicity, I leave aside nominal complements which are full noun phrases with determiners. In the data presented in Chapter 1 for the impersonal uses of German personal pronouns, the *als*-phrases nearly exclusively have bare nouns as nominal complements.

(38)



The tree structure in (38) corresponds to the PredP node in the structure in (34) proposed by Flaate (2007). Based on Anand’s (2006) discussion of the analysis of PRO defended in Chierchia (1989), I adopt the following denotation for the PredP node in (38) built from  $Op_i$  and its complement  $\alpha$ , which is reminiscent of the rule of predicate abstraction proposed in Heim and Kratzer (1998).

$$(39) \quad \llbracket [\text{PredP } Op_i \alpha] \rrbracket^{c,g} = \lambda x. \llbracket \alpha \rrbracket^{g[i/x]}$$

Combining the three assumptions, the meaning of the *als*-phrase, *als Bauer*, yields the predicational meaning proposed in (35). Note that without further assumptions, this proposal only works for adverbial *als*-phrases that are adjacent to their associated nominal expressions.

It is already clear from the data discussion and the summary of Zifonun’s observations above that *als* contributes a more complex meaning than the identity function proposed in (37). Further considerations will help to provide a clearer picture: Jäger (2001, 2003) argues that English *as*-phrases are presupposition triggers. The content of the presupposition is that the property denoted by the nominal complement of *as* holds for the associated individual in the world of evaluation. This claim is supported by the behavior of the *as*-phrases in the following examples.

- (40) a. *John as a judge is corrupt.*  $\rightsquigarrow$  John is a judge.  
 b. *It is not the case that John as a judge is corrupt.*  $\rightsquigarrow$  John is a judge.  
 c. *It is not the case that John as a judge is corrupt since he is not a judge.*  
 $\not\rightsquigarrow$  John is a judge.  
 (Jäger 2001:10)

The truth of the proposition expressed by *John is a judge* in the world of evaluation is not affected under sentential negation. In fact, *John is a judge* has to be explicitly negated to deny John’s being a judge. The predication expressed by the *as*-phrase also “escapes” from the antecedent of a conditional. Consider (41).

- (41) *If John as a judge is corrupt, he is a friend of the Mafia.*  $\rightsquigarrow$  John is a judge.

The behavior of German *als*-phrases in their adnominal and adverbial uses mirrors

the behavior of *as*-phrases in this respect. First, even in the verb-modifying adverbial use, sentential negation does not deny that the predication expressed by the *als*-phrase holds of the associated individual. Those cases in which negation immediately precedes the *als*-phrase have to be classified as constituent negation. Second, *als*-phrases in the antecedent of a conditional behave exactly like English *as*-phrases. This is illustrated in (42).

- (42) *Wenn Peter als Bauer 50.000 Euro verdient, kann er sich einen  
if Peter as farmer 50.000 euros earns can he himself a  
schönen Urlaub leisten.  
beautiful vacation afford  
'If Peter as a farmer earns 50.000 euros, he can afford to go on a nice vacation.'*

Hence, German *als*-phrases also seem to be presupposition triggers which presuppose that the associated individual has the property denoted by the *als*-phrase in the actual world.

Jäger (2001, 2003) connects the restrictive behavior of *as*-phrases with respect to the subjunctive to their presuppositional behavior and analyzes it as intermediate accommodation of the presupposed content in the restrictor of the subjunctive operator (cf. van der Sandt 1992 for presupposition accommodation in DRT). The same analysis can be adopted to account for the corresponding cases involving German *als*-phrases.

Furthermore, I argue that intermediate accommodation can be used to model all non-causal sentence adverbial-like uses of German *als*-phrases. The temporal readings exemplified in (43) can be analyzed by intermediate accommodation of the presupposition in the restrictor of a past tense operator.<sup>11</sup>

- (43) *Sie war als Kind nicht besonders hübsch.  
she was as child not exceptionally pretty  
'When she was a child, she was not exceptionally pretty.'* (temporal)  
(Zifonun 1998:14)

This analysis correctly captures that the temporal adverbial interpretation for *als*-phrases only arises when the co-occurring predicate is in past tense. In general, the temporal and conditional readings of *als*-phrases used like sentence adverbials only arise through an interaction of the *als*-phrase with an operator. If no operator is present, only a “causal” connection between the *als*-phrase and the matrix predication is understood. Consider (44).

- (44) *Sie ist als Kind nicht besonders hübsch.  
she is as child not exceptionally pretty*

<sup>11</sup>For reasons of space, the debate in the literature whether past tense is best modelled with quantifiers over times or with pronoun-like expressions will not be summarized at this point. See Enç (1981, 1986) for the latter view, and Ogihara (2003) for arguments against Enç.

‘As a child, she is not exceptionally pretty.’ (causal)

Hence, the default connection between an *als*-phrase, used like a sentence adverbial, and the co-occurring matrix predicate seems to be Zifonun’s “causal” reading.<sup>12</sup> This cannot be a true causal link, however, since such a relation would be too strong. For example, it cannot reasonably be assumed that being a child causes someone to not be exceptionally pretty. Instead, the *als*-phrase predication and the matrix predication seem to be connected via the relation of “defeasible inference” (cf. Asher and Lascarides 2003). Rather informally, this relation can be defined as in (45).

(45) Two sentences *A* and *B* stand in the relation of defeasible inference iff *A* “normally” entails *B*.

That is, if *A* is true then under “normal circumstances” *B* is also true. For the sentence in (44), this means that the sentence adverbial-like use of the *als*-phrase conveys that children are normally not exceptionally pretty. In connection with the girl’s being a child, which is established by the presupposition of *als*, the apparent “causal” link between the girls being a child and not being exceptionally pretty can be derived.

In the conditional and temporal readings, i.e. when the presupposition of the *als*-phrase is accommodated in the restrictor of an operator, *als*-phrases seem to lose this link to the matrix predication. This is not necessarily the case, though, as is shown by the following example.

(46) *Als Kind mit roten Haaren war Elisabeth besonders hübsch.*  
 as child with red hair was Elisabeth exceptionally pretty  
 ‘When she was a child with red hair, Elisabeth was exceptionally pretty because of that.’  
 (temporal and causal; adapted from Zifonun 1998:15)

Note, however, that the relation of defeasible inference seems to hold only between a part of the *als*-phrase, *mit roten Haaren* (Engl. ‘with red hair’), and the matrix predication. This suggests that the link is not hard-wired in the denotation of *als*.

Adnominally used *als*-phrases also convey a connection of defeasible inference between the predication that they express and the matrix predication. Compare (47) to (44).

(47) *Maria als Kind ist nicht besonders hübsch.*  
 Maria as child is not exceptionally pretty  
 ‘As a child, Maria is not exceptionally pretty.’

In the verb-modifying adverbial use, whether a connection of defeasible inference is

<sup>12</sup>Note that as soon as the *als*-phrase in (44) is read in its verb-modifying adverbial-like use, i.e. ‘in her role as a child’ (assuming such a role is salient), a “temporal” interpretation is available in which the matrix predicate is restricted to those times when the associated individual plays the role.

understood depends on the given matrix predicate, the discourse context, and world knowledge. Example (48) does not convey that farmers usually earn 50.000 euros since the context makes another, conflicting rule explicit, and states that Peter is an exception to it.

**Scenario:** It is the case that farmers normally earn 30.000 euros. Peter, however, is different.

- (48) *Peter verdient als Bauer 50.000 Euro.*  
 Peter earns as farmer 50.000 euros  
 ‘As a farmer, Peter earns 50.000 euros.’

In (49), a connection between being a senior physician and attending conferences is communicated. This is supported by the set up in the scenario.

**Scenario:** Peter is a typical senior physician.

- (49) *Peter geht als Oberarzt auf viele Ärztekongresse.*  
 Peter goes as senior-physician to many medical-conferences  
 ‘As a senior physician, Peter attends many medical conferences.’

These examples suggest as well that the defeasible inference relation is not lexically encoded in the entry for *als*, but that the link arises pragmatically. However, a detailed investigation of the defeasible inference relation that is communicated by *als*-phrases and *as*-phrases is beyond the scope of this thesis, and has to be left for further research.

The two properties of *als*-phrases that need to be accounted for by a full analysis of *als*-phrases are:

1. Jäger’s observation that an *als*-phrase triggers the presupposition that the associated individual has the property expressed by the *als*-phrase in the world of evaluation.
2. The predication expressed by *als*-phrases is pragmatically linked with the matrix predication via a relation of defeasible inference.

The proposal sketched above in (37)–(39) captures neither of the two desiderata. To capture the behavior of *als*-phrases as presupposition triggers, I suggest the formalization in (50).

- (50)  $[[als]]^{c,g,w} = \lambda P_{\langle e,st \rangle}. \lambda x. \lambda w' : P(x)(w). P(x)(w')$

For the reasons given above, the connection of defeasible inference communicated by *als* is neither added as a presupposition, nor as part of the truth-conditional meaning of *als*.

For the formalization in (50), it seems at least pragmatically illicit that *als* presupposes what it asserts. However, the proposed meaning does not yet take into account

the varying behavior regarding the semantic contribution of *als* depending on its syntactic position. Hence, it might be the case that the presupposed content and the truth-conditional content of (50) are never actually presupposed and asserted simultaneously.

With respect to the topic of position-dependent interpretation, Maienborn (2001) makes a similar observation for German adverbial locative expressions. These expressions also have a different semantic function depending on their syntactic position. To capture their behavior, Maienborn proposes that different syntactic positions make available different compositional variants of modification. Working in event semantics, she argues that the different variants of modification associate the argument of locative expressions with different aspects of the matrix event. Maienborn's analysis seems to be a promising starting point for the variable aspect of the meaning of *als*. For reasons of space, this investigation needs to be left for further research.

### A1.3 *Als*-phrases and quantificational operators

In this last subsection, I take a look at the behavior of *als*-phrases with associated plural definite noun phrases, quantifying noun phrases, and in generic sentences, to get a feel for their interaction with nominal expressions other than pronouns and proper names, which both have specific, singular reference.

For plural definite noun phrases, *als*-phrases attribute their property to the entire plurality of individuals. This is illustrated in (51).

**Scenario:** Four dogs play catch together on the lawn.

- (51) *Die Hunde spielen als gesellige Tiere miteinander.*  
 the dogs play as sociable animals with-each-other  
 'As sociable animals, the dogs play with each other.'

The sentence in (51) describes a specific situation in which the entire plurality of dogs do not play by themselves. In a different scenario, in which only three dogs play with each other, and one dog plays alone, example (51) could not be used. That is, *als gesellige Tiere* (Engl. 'as sociable animals') does not restrict the set of salient dogs to those that are sociable, but expresses that the dogs in the context are sociable animals, and it is implied that sociable animals usually play with each other.

For nominal quantifiers, the *als*-phrase attributes its property to all individuals in the domain of the quantifier.

- (52) a. *Alle Hunde spielen als gesellige Tiere miteinander.*  
 all dogs play as sociable animals with-each-other  
 'As sociable animals, all dogs play with each other.'
- b. *Die meisten Hunde spielen als gesellige Tiere miteinander.*  
 the most dogs play as sociable animals with-each-other

- ‘As sociable animals, most dogs play with each other.’
- c. *Viele Hunde spielen als gesellige Tiere miteinander.*  
 many dogs play as sociable animals with-each-other  
 ‘As sociable animals, many dogs play with each other.’
- d. *Wenige Hunde spielen als gesellige Tiere allein.*  
 few dogs play as sociable animals alone  
 ‘As sociable animals, few dogs play alone.’

In the examples above, it is stated that all, most, many, or few dogs play with each other and that they are all sociable animals. In addition, being sociable is again conveyed to defeasibly entail that one does not play alone. Crucially, the sentences in (52) neither express that all, most, many, or few of the salient dogs are sociable animals and play alone, nor that all, most, many, or few of the salient sociable dogs play alone.

This observation suggests that *als*-phrases do not restrict nominal quantifiers. This claim is further supported by examples like (53).

- (53) ??*Als Bernhardiner wiegen die meisten Hunde über 100 Kilo.*  
 as Saint-Bernard weigh the most dogs over 100 kilos  
 ‘As St. Bernards, most dogs weigh over 100 kilos.’

Example (53) cannot be understood as expressing that most dogs that are St. Bernards weigh more than 100 kilos. The only interpretation for this sentence is the odd claim that dogs are St. Bernards, and that therefore, most of them weigh more than 100 kilos.

The behavior of *als*-phrases with respect to nominal quantifiers contrasts with the restricting behavior observed with *als*-phrases and intensional operators. For the impersonal uses of personal pronouns, especially the interaction of *als*-phrases with the generic operator *Gen* is of interest. *Gen* is analyzed in the recent literature as contributing universal quantification over worlds and the set of individuals in these worlds that have the “right” properties (cf. Chapter 3). Therefore, *Gen* could in principle pattern like nominal quantifiers or intensional operators with respect to *als*-phrases.

For ordinary generic sentences with indefinite singular or bare plural subjects, the adnominal use of the *als*-phrases in (54-a) and (55-a) is odd, but not entirely ungrammatical. The adverbial-like uses in (54-b) and (55-b), in contrast, are perfectly grammatical.

- (54) a. ??*Ein Hund als Säugetier bringt lebendige Junge zur Welt.*  
 a dog as mammal brings live young to-the world  
 b. *Ein Hund bringt als Säugetier lebendige Junge zur Welt.*  
 a dog brings as mammal live young to-the world
- (55) a. ??*Hunde als Säugetiere bringen lebendige Junge zur Welt.*  
 dogs as mammals bring live young to-the world

- b. *Hunde bringen als Säugetiere lebendige Junge zur Welt.*  
 dogs bring as mammals live young to-the world

The following example shows that neither adnominal nor adverbial *als*-phrases are able to further restrict the set of individuals for which the generalization is stated, i.e. the set of *dogs*.

- (56) a. ??/# *Ein Hund (als Terrier) bringt (als Terrier) lebendige Junge zur Welt.*  
 a dog as Terrier bringt as Terrier live young to-the world
- b. ??/# *Hunde (als Terrier) bringen (als Terrier) lebendige Junge zur Welt.*  
 dogs as Terrier bring as Terrier live young to-the world

The *als*-phrase, *als Terrier*, in (56) can only be understood as conveying that dogs in general are Terriers. Therefore, the generic operator *Gen* seems to pattern with nominal quantifiers with respect to the universal quantification over individuals: the *als*-phrase attributes its property to all elements in each set of individuals with the right properties in the generically accessible worlds. The sentences in (54) and (55) are acceptable since the *als*-phrase conveys that dogs in general are mammals—a biological fact—, that mammals normally bear live young—another biological fact—, and that consequently dogs bear live young.

Generic sentences that contain impersonally used *ich*, *du*, or *man* show a strict contrast regarding adnominal and adverbial-like uses of *als*-phrases. If *man* is used as the associated nominal expression, *als*-phrases are ungrammatical in their adnominal use, but adverbial-like uses are perfectly grammatical, see (57).

- (57) a. \**Man als Bauer melkt seine Kühe.*  
 one as farmer milks one's cows
- b. *Man melkt als Bauer seine Kühe.*  
 one must as farmer one's cows milk  
 'As a farmer, one milks one's cows.' ≈ 'A farmer milks his cows.'

For the impersonal readings of *ich* and *du*, adnominal *als*-phrases force the pronouns to be interpreted in their referential use. When the pronouns co-occur with adverbial-like uses of *als*-phrases, in contrast, the impersonal reading is supported (cf. Chapter 1). Consider (58) and (59).

- (58) a. *Ich als Bauer melke meine Kühe.*  
 I as farmer milk my cows  
 Unavailable: 'A farmer milks his cows.'  
 Available: 'Being a farmer, I (the speaker) milk my cows.'

- b. *Ich melke als Bauer meine Kühe.*  
 I milk as farmer my cows  
 Available: ‘A farmer milks his cows.’  
 Available: ‘As a famer, I (the speaker) milk my cows.’
- (59) a. *Du als Bauer melkst deine Kühe.*  
 you as farmer milk your cows  
 Unavailable: ‘A farmer milks his cows.’  
 Available: ‘Being a farmer, you (the addressee) milk your cows.’
- b. *Du melkst als Bauer deine Kühe.*  
 you milk as farmer your cows  
 Available: ‘A farmer milks his cows.’  
 Available: ‘As a famer, you (the addressee) milk your cows.’

Note that the translations given for the examples in (57-b), (58-b), and (59-b) suggest that the *als*-phrases “restrict” the set of individuals contributed by *ich*, *du*, and *man* to those individuals that have the property denoted by the nominal complement of *als*. This apparent difference between the restriction behavior of *als*-phrases in ordinary generic sentences and that in generic sentences containing *ich*, *du*, or *man* may be a result of the meaning of impersonally used *ich*, *du*, and *man*. That is, the interaction between the *als*-phrases and the three pronouns may provide further insights into the interpretation of these pronouns. Since the three pronouns are truth-conditionally equivalent (cf. Chapter 1), I illustrate this argument by example of impersonal *man*.

There are (at least) two possible analyses for the semantic contribution of *man* and its interaction with *als Bauer* (Engl. ‘as a farmer’) in (57-b). First, it could be assumed that *man* always contributes a variable ranging over the set of all (animate) individuals that serves as the domain for the universal quantifier over individuals contributed by the generic operator. In this case, the *als*-phrase needs to restrict the set of all individuals to the subset expressed by its nominal complement so that the meaning that is intuitively understood can be derived. The second possibility is to assume that the domain of the variable contributed by *man* is underspecified, and is only per default fixed as the set of animate individuals. In this case, the *als*-phrase does not restrict a given set of individuals, but makes the domain of quantification explicit. In other words, the speaker may use an *als*-phrase to explicitly fix the domain to a specific set.

Given the observations so far, I argue that the second option fits better with the behavior of *als*-phrases in ordinary generic sentences, and should therefore be adopted if the proposal in Chapter 4 is to be extended with a detailed account of *als*-phrases.

## A2 On the connection between pragmatic effects and German discourse particles

### A2.1 Preliminaries

Discourse particles are a class of lexical elements which co-occur frequently with the impersonal uses of German first and second person singular pronouns *ich* and *du*.<sup>13</sup> In Chapter 1, it was determined that discourse particles are not necessary for the impersonal readings to arise, but that their presence has a supporting effect on the availability of these readings. Furthermore, it was argued that their presence may—to a certain degree—be taken as pointers towards the make-up of the discourse context.

The aim of the following discussion is to determine whether the pragmatic function of discourse particles can indeed be employed as a diagnostic tool on the contexts provided by the real life data collected from the internet.

The assumption that I start out with is that particles provide reliable pointers with respect to the make-up of the discourse context. If this assumption turns out to be correct, discourse particles could be used as a diagnostic tool to gain a better sense of the contextual preferences of the impersonal readings on the basis of bigger collections of real life data.

In the data discussion in Chapter 1, it was observed that the impersonal uses of *ich* and *du* show a general preference regarding specific co-occurring particles: impersonally used *ich* seems to prefer *doch* while impersonally used *du* prefers *ja*. This distribution is illustrated in (60).

**Context:** Discussion about a news item: a 10-year-old Belgian girl is pregnant. The father is her 13-year-old friend. B thinks the parents breached their duty of supervision.

- (60) A: *Ich meine - du kannst dein Kind ja nicht auf Schritt und Tritt verfolgen.*  
 I mean you can your child PRT not wherever-he/she-goes follow  
 ‘I mean, one can’t always follow one’s child around.’
- B: *Klar, aber ich muss doch als Eltern merken, wenn mein Kind sich schon über solche Sachen Gedanken macht.*  
 sure but I must PRT as parents notice if my child already about such things wonders  
 ‘Sure, but parents have to notice if their child already wonders about such things.’<sup>14</sup>

<sup>13</sup>German is a rich particle language. Particles exist that may be used to express agreement, disagreement, surprise, interest, strengthening, reservation, and other speaker attitudes relative to the propositional content of the utterance, but also convey speaker-beliefs and -expectations regarding the epistemic state of the addressee.

<sup>14</sup><http://de.answers.yahoo.com/question/index?qid=20070928054833AA12RG0>

Does this intuitive preference constitute a strict correspondence between discourse particles and impersonal uses? The actual distribution of particles in the data is not as clear cut as in (60). The particles that most frequently co-occur with the impersonally used *ich* in the data collection are both *doch* and *ja*. But other particles can also be found with the impersonal use of *ich* although infrequently, e.g. *wohl*, *halt*, and *auch*. Similarly, the particles that are most frequently found with the impersonal use of *du* are *doch* and *ja* (sometimes in clusters with other particles), but there are other particles like *wohl* and various other particles that also co-occur less frequently.

Since the data used in this thesis was not collected in such a way that the co-occurrence frequencies can be taken to represent the actual co-occurrence frequencies (cf. Introduction), one can only conclude from the attested combinations that there are no exclusive particle-pronoun combinations; the impersonal readings of *ich* and *du* share most of the co-occurring discourse particles even though they differ in their preferred discourse contexts (cf. Chapter 1).

A possible reason for this discrepancy may be that the pragmatic functions performed by the particles “fit” the preferred contexts of *ich* and *du* in different ways.

Before discussing discourse particles in general, and the relevant German discourse particles that co-occur with the impersonal readings of *ich* and *du* in particular, I briefly summarize the pragmatic restrictions for the two pronouns determined in Chapter 1.<sup>15</sup>

The impersonal use of *du* appeals to the addressee’s empathy, which creates closeness between the speaker and the addressee. Impersonally used *du* has a slight preference for “positive contexts”, i.e. contexts in which the speaker can assume that the opinion he expresses is not in conflict with the opinions and actions of other people in the context. The pragmatic effect of creating closeness between speaker and addressee also supports the use of impersonally interpreted *du* in a subset of “negative contexts”, though. Negative contexts are discourse contexts in which the statement expressed by the speaker’s utterance is in conflict with the opinions or actions of another individual in the context (not necessarily another discourse participant). In a negative context, the appeal to the addressee’s empathy can be used to strengthen an attempt to change the addressee’s opinion—if he is the one contesting the validity of the utterance.

In contrast to the impersonal use of *du*, the impersonal use of *ich* has a distancing effect. The speaker does not try to appeal to the addressee or any other discourse participant, but expresses that he fully supports the content of the generalization even though the validity is not universally accepted. The impersonal use of *ich* therefore has a strong preference for negative contexts. Example (60) illustrates the impersonal uses of *ich* and *du* in negative contexts.

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<sup>15</sup>For further details and more examples, see the data discussion in Chapter 1.

## A2.2 (German) discourse particles and their contexts of use

Discourse particles and their unique, pragmatic function have frequently been the center of discussion in the recent formal semantic and pragmatic literature (cf. Zimmermann 2011a).<sup>16</sup> Zimmermann (2011a) describes the central function common to all particles as “fitting the content of a sentence to the context of speech”. The pragmatic fitting procedures that are employed to integrate the sentence content into the discourse context seem to be unique for each individual particle. In this respect, discourse particles do not constitute a uniform class, but rather a general purpose collection. The following list of particles and their functions, taken from the literature, illustrate this point.

- Dutch *toch* reminds the addressee of some old information (cf. Zeevat 2000).
- English *man* has two uses, depending on the syntactic position. In the first use, it expresses speaker attitudes, and in the second use, it additionally intensifies a gradable predicate in its containing sentence (cf. McCready 2009).
- Japanese *yo* marks hearer-new information (cf. McCready 2007).
- German *ruhig* adds a flavor of reassurance (cf. Schwager 2010).

There is no consensus in the literature with respect to the formal analysis of the pragmatic contribution of discourse particles in general. While it is agreed on that particles contribute not-at-issue content (cf. Potts 2005, Simons et al. 2011), the specific variant of not-at-issue content that the various particles contribute seems to vary with the different particles. Given the diversity of functions already exemplified above, this is not particularly surprising: it seems that the analyses of the individual particles need to be as diverse as the functions they perform.

However, even for many individual particles, various different analyses have been suggested in the literature already. For instance, for the German particle *doch*, at least three different proposals exist: (i) *doch* is said to contribute presupposed content, (ii) it is said to trigger a conventional implicature, and (iii) it acts like a speech act operator (cf. Egg 2010; Grosz 2014; Zimmermann 2011a, among others).

For reasons of space, the discussion in this part of the appendix is restricted to the German particles *doch* and *ja*. As noted in the previous subsection, they most frequently co-occur with the impersonal readings of *ich* and *du* in the data collection.<sup>17</sup> The conclusion regarding the viability of discourse particles as a diagnostic tool does not hinge on any specific formal analysis. Therefore, I forego a detailed discussion of

<sup>16</sup>For an overview of the morphosyntactic characteristics of discourse particles on the basis of German particles see Lindner (1991) and Gutzmann (2008).

<sup>17</sup>German has stressed and unstressed variants of *doch* and *ja* which some researchers analyze as distinct particles and others as focus variants of the same lexical elements. Only the unstressed variants co-occur with the impersonal readings of *ich* and *du*. For this reason, I leave the stressed variants aside in this discussion.

the various analyses for the two particles, and give only a general, descriptive characterization of their contributions.

Like all discourse particles, *doch* and *ja* comment on the propositional content  $p$  of their containing utterance (cf. Zimmermann 2011a). However, even the specific contributions of *doch* and *ja* seem to be similar to each other. The two particles are both analyzed as connecting the propositional content  $p$  to the common ground that was built up in the course of the conversation.

(61) Common ground:

The common ground for a context is the set of all propositions that the discourse participants in that context mutually and publicly agree to treat as true for the purposes of the conversation (cf. Stalnaker 1978).

*Doch* signals that the propositional content  $p$  is old information which is (maybe indirectly) in conflict with the propositional content of another utterance in the discourse. Specifically, it expresses that there is a proposition  $q$  in the common ground that is incompatible with  $p$ . Additionally, *doch* signals that the speaker believes that the addressee is not aware of or does not entertain  $p$ , and that the speaker considers  $p$  to be obvious or evident. Example (62) illustrates the use of *doch*.

(62) *Max ist doch auf See.*

Max is PRT at sea  
'But, Max is at sea.'

Propositional content: 'Max is at sea.'

(Zimmermann 2011a:2013)

*Ja* marks the propositional content  $p$  as old or known information, i.e.  $p$  is in the common ground. It signals that  $p$  is evident to the speaker, and that the addressee is assumed to be, or should be aware of  $p$ , as well. See (63).

(63) *Max ist ja auf See.*

Max is PRT at sea  
'As you know, Max is at sea.'

Propositional content: 'Max is at sea.'

(Zimmermann 2011a:2013)

Given the specific pragmatic contributions of the two particles, it is expected that some contexts are more compatible with the pragmatic function of some particles than others. In other words, it is expected that there are contexts for which the use of a given particle results in pragmatic oddness.

Zimmermann (2011a) argues that the "illicit contexts of use" for *doch* and *ja* can be directly deduced from their pragmatic function. Since both particles interact with the common ground, those discourse contexts are expected to be incompatible with

the function of *doch* and *ja* for which the particles' comments are in conflict with the common ground. For *doch*, the illicit contexts are those in which the speaker knows that the addressee already actively entertains *p*. This is illustrated in (64).

- (64) a. A: *I'm off, even if there's beer.*  
 b. B: #*Du gehst? Es gibt doch Bier.*  
       you go     there-is PRT beer  
       B: 'You're off? But there's beer.'  
       (Zimmermann 2011a:2018)

In (64), A communicates that he is aware that there is beer. Hence, the use of *doch* in B's answer is odd since it signals that B thinks that A is unaware of the beer.

*Ja*, on the other hand, is incompatible with contexts in which the speaker is breaking news, answers a question, or makes a correction, i.e. when it is clear that *p* is not part of the common ground, see (65)

**Scenario:** Happy young dad to passer-by:

- (65) #*Ich habe ja eine Tochter.*  
       I have PRT a daughter  
       'I have a daughter, y'know.'  
       (Zimmermann 2011a:2017)

At first blush, the pragmatic oddness resulting from the use of particles in illicit contexts seems to be clear enough to be used as a diagnostic tool to determine the make-up of discourse contexts. However, Zimmermann (2011a) adds an important caveat to his observation on illicit contexts: The use of particles in illicit contexts does not always result in pragmatic oddness. The mismatch between particles and contexts can be used to induce secondary pragmatic effects such as paralinguistic meaning (e.g. the expression of emotion), and indirect speech acts. Consider example (66).

- (66) *Du bist ja wieder zurück!*  
       you are PRT again back  
       'You're back!'  
       (Zimmermann 2011a:2027)

In (66), the particle *ja* assists in expressing the speaker's surprise at the presence of the addressee. An utterance of this kind most naturally occurs as an immediate reaction to the speaker noticing that the addressee is back. Hence, the propositional content of the utterance, 'the addressee is back', cannot be assumed to be part of the common ground—it is news to the speaker. So, according to the considerations above, the most natural context of use for (66) is an illicit discourse context for *ja*.

This observation suggests that the contextual restrictions on particles based on their pragmatic contribution depend on other pragmatic considerations as well. Hence, the

presence of a discourse particle cannot be used as a definitive diagnostic tool for the context in which the sentence is uttered. The presence alone does not provide enough information to infer a specific contextual make-up. So in some sense, the requirements that particles place on their contexts of use are only general preferences, which may be violated to achieve further pragmatic effects.

Other than the use of a particle in an illicit context, the unexpected absence of a particle is also sometimes argued to produce a clear-cut effect. Can this effect be used to identify the make-up of the context?

Zeevat (2000) states that omitting a particle that fits the utterance context results in a pragmatically infelicitous utterance. He suggests that particles mark “non-standard assertions”. For example, German *doch* and *ja* both mark re-asserted material, i.e. propositions that are already part of the common ground. By omitting either *doch* or *ja* where it is needed, Zeevat suggests, the speaker fails to correctly flag his utterance as a non-standard assertion, and his utterance is perceived as infelicitous.

Zeevat’s motivation for this analysis is the observation that re-uttering material from the common ground, as well as uttering something which is in conflict with a proposition in the common ground violates preconditions for felicitous assertions (cf. Searle 1969; Stalnaker 1978).<sup>18</sup> This is illustrated for *ja* in (67).

**Context:** Both speaker and addressee know that Peter is at home.

- (67) *Lass uns Peter besuchen. Er ist #(ja) zu Hause.*  
 let us Peter visit he is PRT at home  
 ‘Let’s visit Peter. (As you know,) he is at home.’  
 (adapted from Zeevat 2000:75)

Since the proposition that Peter is at home is in the common ground in (67), asserting the second sentence without marking it as old information results in pragmatic oddness. By using *ja*, the speaker flags his utterance, and no oddness arises.

Given Zeevat’s analysis of the function of discourse particles, one could conclude that a particle has to be used whenever it can be used. However, omitting a particle even though it could have been used does not always result in pragmatic infelicity as in (67). An utterance for which the truth of its content has been established at some point in the past (i.e. its content is technically part of the common ground), but which the addressee may have forgotten (e.g. given his behavior) does not necessarily constitute

<sup>18</sup>Zeevat (2000) adopts Stalnaker’s (1978) view on assertions. Stalnaker proposes “rules and principles of assertion” based on “presupposed material” which are related to the conditions proposed by Austin (1962) and Searle (1969) for felicitous assertions: “To assert something incompatible with what is presupposed is self-defeating. [...] And to assert something which is already presupposed is to attempt to do something that is already done.” (Stalnaker 1978:88f). The term “being presupposed” in Stalnaker’s view on presuppositions is equivalent to “being inside the common ground”, as adopted in this discussion.

a failed or defective assertion if it is not marked by appropriate particles. Example (68) illustrates a case where *doch* and *ja* are in fact dispreferred contrary to expectations.

**Context:** The addressee is an amnesiac and believes that she has never been to Paris. But in fact, she has been to Paris with the speaker, who “reminds” her of the trip by showing her a photo of them in front of the Eiffel tower.

- (68) *Du warst ?ja/ ?doch/ ∅ schon in Paris.*  
 you were PRT PRT ∅ already in Paris  
 ‘You’ve (?ja/?doch/∅) already been to Paris.’  
 (adapted from Grosz 2014:4)

Given the context in (68), the proposition that the addressee has already been to Paris is established in the common ground—assuming that no propositions can be deleted from it. Thus, the use of *ja* or *doch* is expected to be preferred, but is dispreferred since it suggests that the speaker expects the addressee to remember the trip (if nothing else).

To account for (68), one could argue that mutual knowledge of the addressee’s amnesia may induce a public retraction of all of her previous beliefs, i.e. a revision of the common ground. This would re-attribute the status of new information to the content of *Du warst in Paris* (Engl. ‘You’ve been to Paris’). However, there are similar cases where it is not made explicit whether the addressee (i) actually forgot a particular fact, (ii) is merely unaware of it, or (iii) intentionally ignores it. Consider (69).

**Context:** Peter and Paul both were guests at Hein’s party where Hein announced that he decided to become a vegetarian. Two weeks later, Peter, who is a big fan of meat, is planning his traditional barbeque. He tells Paul excitedly about how much he is looking forward to hanging out with him and Hein, drinking beer, eating burgers, sausages, and other awesome stuff. He then asks Paul whether Hein would be willing to bring one kilo of sausages this time. At this point, Paul interrupts Peter, and tells/reminds him of Hein’s vegetarianism.

- (69) Paul: *Hein ist ja/ doch/ ∅ jetzt Vegetarier.*  
 Hein is PRT PRT ∅ now vegetarian  
 Paul: ‘Hein is (ja/doch/∅) a vegetarian now.’

Whether Paul feels that he reminds Peter, or tells Peter of Hein’s vegetarianism depends solely on Paul’s assumption about Peter’s knowledge state. If Paul assumes that Peter is ignoring Hein’s new conviction, or that it has temporarily slipped Peter’s mind, he will use *ja* or *doch*. If he assumes that Peter actually forgot about Hein’s new dietary preferences (Peter could have been really drunk at Hein’s party), he could leave out the particles altogether. To assume revision of the common ground, which involves Peter’s

public beliefs, on the basis of Paul's assumptions about Peter's beliefs would be too strong in this case.

Note that (68) and (69) share the property that the propositional content of the utterances has not been explicitly established in the course of the ongoing conversation. This might also set these two examples apart from other examples above.

In sum, the discussion above suggests that absence of a particle only allows inferences as to the make-up of the context if mutual knowledge about the knowledge states of the discourse participants can be assumed. The presence of a particle only allows similar inferences if it is not used to convey secondary pragmatic effects.

### A2.3 Particles and data from the internet

Examples (68) and (69) suggest that the use of *doch* and *ja* may depend on, and communicate something about the speaker's assumptions regarding the addressee's knowledge state. In most recent literature on the contribution of *doch* and *ja*, the domain of operation for *doch* and *ja* is replaced by some weaker, more nuanced notion (cf. Grosz 2014; Karagjosova 2004; Kaufmann and Schwager 2010; Zimmermann 2011a).

Grosz (2014) follows Kratzer and Matthewson (2009) in discarding the common ground as the domain which *doch* and *ja* make reference to. Kratzer and Matthewson substitute "being in the common ground" with the notion of "being established". Grosz states that for *doch*, the speaker needs to be able to take the propositional content *p* to be established even if *p* conflicts with the addressee's opinions—which the speaker judges as wrong—, or if the addressee is unaware of or has forgotten that *p* (Grosz 2014:fn1). This new notion of being established covers the amnesia and the barbeque example, but does not take into account the particles' dependence on the speaker's assumptions about the addressee's belief state, as observed above. If propositional content has not been established explicitly in a conversation, the speaker's decision to use a particle seems to depend on his assumptions about the addressee's knowledge state rather than the established beliefs of the addressee. In the special case when two or more discourse participants interact who do not share a history of communication, the discrepancies between the addressee's actual beliefs and the speaker's assumptions about the addressee's beliefs may be considerable. Contexts of this kind are interesting test cases for any analysis of discourse particles.

For data taken from the internet, e.g. from forum discussions, comments on newspaper articles, or blog posts, it is more or less the norm that the discourse participants have no previous knowledge about each other and each other's beliefs. That is, the use of linguistic expressions which depend on the level of common ground or public beliefs should strictly not occur, or if it does, it is necessarily based on guesswork. For

instance, whether a speaker uses *doch* or *ja* seems to depend on which beliefs he is willing to ascribe to the other discourse participants.

For cautious speakers who do not want to ascribe beliefs to other discourse participants without sufficient evidence, *doch* and *ja* are expected to occur only in two kinds of utterances: (i) those which express propositions that are “truths that are generally accepted”, and (ii) propositions which directly take up, or reply to a previous utterance of another participant. Therefore in this type of data, the absence of a particle does not allow automatic inferences on the make-up of the context of use, since a speaker may simply have decided not to make the necessary assumptions.

A different, more general consideration, which also suggests that discourse particles that are used in written data taken from the internet need to be handled with care, is that discourse particles are predominantly found in spoken language. Even though some of the collected examples may be considered close to spoken German, the style of German found in forum discussions, transcribed interviews, and user comments can be expected to be a mix between written and spoken German. Since the use of discourse particles is less frequent in written German, and signals a colloquial register, the use of particles in these texts also depends on the speaker’s choices in matters of register and style.<sup>19</sup>

So in sum, the presence or absence of a specific discourse particle in an example taken from the internet may depend on (at least) three different points of consideration:

- the explicit discourse context
- the speaker’s assumptions about the established facts, which involves the other participants’ beliefs
- the register chosen by the speaker and stylistic reasons

## A2.4 Discourse particles and impersonal *ich*

Even though the previous subsections suggest that particles cannot be used as an automatic diagnostic tool on the discourse contexts of data taken from the internet, they can be used to infer a general tendency with respect to the contexts of use of impersonally used *ich* and *du*. This investigation, however, needs to be performed for one example at a time to control for the different confounding aspects discussed above.

For those examples that feature a particle, it first has to be determined whether the particle is used in a regular manner, or to derive secondary pragmatic effects. If the latter is the case, the particle can be discarded as not commenting on the actual discourse context. If the particle is used in a regular manner, it has to be determined to which

<sup>19</sup>This is not to say that discourse particles are never found in non-colloquial written German. In literary texts, for example, particles may be used as a stylistic device to indicate free indirect discourse, i.e. reports of speech or thought of protagonists of a narration (cf. Eckardt to appear). Even in this function, they are, however, strongly connected to spoken language.

part of the context the particle relates. As a second step, it can be checked whether the particle's contribution supports the intuition regarding the preferred contexts of use for the impersonally used personal pronoun.

For those examples which do not contain a particle, it can be tested whether adding different particles either results in pragmatic oddness, or assists in deriving secondary pragmatic effects. If this is the case, the discourse context counts as an illicit context for the particle, which allows to infer properties of the make-up of the context.

In this subsection, I use the general strategy described above on the data collected for the impersonal use of first person singular *ich* to answer the following question: Do the particles *doch* and *ja*, which co-occur with the impersonal reading of *ich* in the collected data, support the intuition that the impersonal use of *ich* prefers negative contexts?

First, let us consider the general compatibility of *doch* and *ja* with negative contexts. *Doch* is a perfect fit for negative contexts because it conveys that the propositional content of its containing utterance is in conflict with another proposition in the context. This suggests that it should be possible to felicitously insert *doch* in all of the examples featuring the impersonal use of *ich*.

In contrast to *doch*, *ja* seems to fit less well with the negative context requirement of the impersonal reading of *ich*: it marks the proposition denoted by the containing utterance as addressee-old information, but does not point out an existing conflict like *doch*. This, *per se*, does not mean that *ja* is incompatible with negative contexts. However, there could be a reason to assume that *ja* never occurs in negative contexts. From the description of the contribution of *doch* and *ja* given above, one might conclude that *doch* and *ja* share the same component that issues a reminder, but that *doch* additionally signals a possible conflict, i.e. that '*doch* = *ja* + contrast' (cf. Grosz 2014). If this is the case, one could argue that via some principle of "maximize pragmatic fit" the use of *ja* signals that there is no conflict in the context—otherwise the speaker would have used *doch*.<sup>20</sup>

As Kaufmann and Schwager (2010) point out, the distribution of *ja* and *doch* across clause types suggests that the relation between the contributions of *doch* and *ja* is more complicated than '*doch* = *ja* + contrast'. If *doch* were a more specific version of *ja*, one would expect *ja* to be grammatical in the same environments as *doch*. This is not the case, though, since only *doch*, but not *ja*, can occur in imperatives. Consequently, the presence of *ja* does not necessarily signal that there is no conflicting proposition in the context. This, in turn, suggests that in principle, *ja* is compatible with negative contexts.

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<sup>20</sup>An argument along these lines is made in Grosz (2014). Grosz analyzes the contribution of *doch* and *ja* as presuppositions, and argues that by Heim's rule of "Maximize Presupposition" (Heim 1991) always the most specific particle needs to be used.

Consider the following specific occurrences of *doch* and *ja* in (70) and (71).

**Context:** “How much money do you give as a present at a wedding?” - The initial question is whether 100 euros is enough. One user argues that it is customary to adjust the amount of money relative to the size and cost of the wedding party held by the bridal couple. The utterance responds to a post by another user who says that the guests have to adjust the given sum to the size and style of the wedding party chosen by the bridal couple.

- (70) *Ich find das ist ein total doofes Argument! Ich kann doch als Brautpaar nicht von meinen Gästen erwarten, dass sie mir quasi die Feier finanzieren!*  
 I think this is a totally stupid argument I can PRT as  
 bridal-couple not from my guests expect that they me  
 more-or-less the party finance  
 ‘I think this is an absolutely stupid argument! The bridal couple can’t expect their guests to more or less pay the party!’<sup>21</sup>

The speaker of (70) infers from the post to which she responds that the other user thinks that a bridal couple can in fact expect their guests to cover the party expenses. This implicit conflict constitutes the negative context for the impersonal use of *ich*. The particle *doch* can be analyzed as making this conflict explicit.

**Context:** Discussion on whether someone who wants to sell an iphone with iOS jailbreak has to describe in detail what an iOS jailbreak means for the functionality of the iphone.<sup>22</sup> The example is uttered in a direct answer to the comment: ‘The seller is not responsible for what the buyer knows or doesn’t know about the device he is buying. He only has to describe what he is selling.’ The speaker forcefully argues against the point of view of this other user, saying that the buyer should not be required to do research on the modifications that the seller made.

- (71) *Ich kann als Käufer ja nicht erraten, was das alles für Auswirkungen hat.*  
 I can as buyer PRT not guess what that all for consequences  
 has  
 ‘As the buyer in question, one doesn’t really have an idea what the full consequences of this are.’<sup>23</sup>

The conflict between these opposing points of view constitute the negative context.

<sup>21</sup><http://www.urbia.de/archiv/forum/th-2142726/Wieviel-Geld-zur-Hochzeit-schenken.html>

<sup>22</sup>An iOS jailbreak is a modification of the operating system on an Apple device which is performed to get rid of the restrictions and limitations imposed by Apple, and to give complete control to the user. After a jailbreak, performing updates issued by Apple may render the device unusable.

<sup>23</sup><http://board.gulli.com/thread/1586288-iphone-bei-ebay-verkauft-und-mit-kaeufner-nun-problem/>

But, what is the function of *ja* in this example? One pointer towards an answer can be found in Eckardt (to appear), who discusses the rhetorical function of *ja*. She argues that one reason to utter a sentence marked by *ja* is to use it as a part of a “wider rhetorical structure, for instance as evidence in favor of another claim” (Eckardt to appear:9). Consider example (72).

**Context:** A and B know that Peter always visits his mother on a Monday evening. It’s Monday evening, and A mistakenly believes that Peter is on a date. B corrects A.

- (72) A: *Peter ist gerade auf einem Date!*  
 Peter is at-the-moment on a date  
 ‘Peter is on a date right now!’
- B: *Das kann nicht sein! Es ist ja/doch Montag!*  
 that can not be it is PRT Monday  
 ‘That’s impossible! As you know, it’s Monday!’

In B’s answer, both *doch* and *ja* are equally good. *Doch* could be used to state that its being Monday is in conflict with A’s utterance that Peter is on a date, which implies that Peter is not visiting his mother contrary to habit. In contrast, *ja* could be used to mark the second sentence of B’s utterance as an (uncontroversial) elaboration on the first part of the utterance. That is, the reason for why B does not believe that A’s utterance is true, as implied by Eckardt’s observation.

For the use of *ja* in (71), a similar explanation can be given. The speaker motivates her conflicting opinion by uttering (71), and *ja* signals that she expects the reason expressed by her statement to be easily accepted by the other discourse participants.<sup>24</sup>

So, even though *doch* and *ja* can in principle co-occur with the impersonal use of *ich*, the use of *ja* seems to underlie certain restrictions: while *doch* may be inserted in all examples of the impersonal use of *ich*, inserting *ja* may result in pragmatic oddness. This prediction is borne out. Consider example (73).

**Context:** A soccer team often performed badly in away games because the players did not give their all on these occasions. A states the team’s mistake:

- (73) A: *Wenn ich als Mannschaft gewinnen will, muss ich (doch/#ja)*  
 if I as team win want must I PRT/PRT  
*motiviert auf den Platz gehen.*  
 motivated on the field go  
 A: ‘If a team wants to win, it has to enter the field motivated.’<sup>25</sup>

Under the assumption that the team under discussion indeed wanted to win the away games, the team repeatedly acted in conflict with the consequent, ‘The team has to

<sup>24</sup>I thank Magdalena Kaufmann (p.c.) for pointing this out to me.

<sup>25</sup>Adapted from [http://www.welt.de/print-welt/article532778/Schlechte\\_Argumente\\_fuer\\_den\\_Aufnahmeantrag\\_an\\_die\\_G\\_14.html](http://www.welt.de/print-welt/article532778/Schlechte_Argumente_fuer_den_Aufnahmeantrag_an_die_G_14.html)

enter the field motivated'. This constitutes the preferred negative context for the impersonal reading of *ich*. When the particle *doch* is inserted in the consequent, the example improves, and sounds more natural. In contrast, inserting *ja* results in pragmatic oddness.

The observations in this subsection are in line with the analysis put forth in Chapter 1 that there is a principled connection between impersonally used *ich* and negative contexts. Determining the exact connection between the impersonal uses of *ich* and *du* and their preferred contexts of use, though, will have to be left for further research. A possible point of departure could be to investigate the connection between the contextual preferences and the analysis of the pragmatic components of the impersonal uses of *ich* and *du* in Chapter 4. According to this account impersonally used *ich* and *du* contribute not-at-issue meaning, not unlike particles, from which the preferred contexts can be inferred in the same way that Zimmermann (2011a) infers the illicit contexts for German discourse particles. A second possibility is to determine how the different not-at-issue contents of the impersonal uses and the discourse particles interact.

## A3 Impersonal readings and conditional generics

### A3.1 Preliminaries

In Chapter 3, where the intensional sentential context for impersonally used *ich*, *du*, and *man* were discussed, examples of these pronouns in conditionals have been left aside. The main reasons for this decision were that conditionals introduce new theoretical issues with respect to the interaction of overt and covert operators, and the restricting behavior of *if*-clauses. The aim of this part of the appendix is to discuss these issues. The different types of conditional generic sentences found with impersonally used *ich*, *du*, and *man* are illustrated in (74)–(79).<sup>26</sup>

Examples (74) and (75) illustrate conditionals containing no additional modals in the consequent.

- (74) *Wenn ich als Katze ständig von Hunden gehetzt werde, verziehe ich*  
 if I as cat all-the-time by dogs chased get slink-off I  
*mich doch lieber.*  
 me PRT preferably  
 'If a cat is chased by dogs all the time, it prefers to get away.'<sup>27</sup>

<sup>26</sup>Conditional generic sentences in general are discussed e.g. in Carlson (1977), Farkas and Sugioka (1983), ter Meulen (1986), and Krifka et al. (1995).

<sup>27</sup><http://www.degopedia.de/forum/viewtopic.php?p=10434>

- (75) *Wenn du als Frau dasselbe trinkst wie ein Mann, hast du nachher*  
 if you as woman the-same drink as a man have you afterwards  
*ein Fünftel mehr Alkohol im Blut.*  
 a fifth more alcohol in-the blood  
 ‘If a woman drinks the same amount as a man, she afterwards has a blood  
 alcohol level that is a fifth higher.’<sup>28</sup>

In addition to this kind of conditional generic sentences, conditional generic sentences that contain the same overt modal elements that are observed for non-conditional generic sentences with impersonally used *ich* and *du* can be observed. The four examples in (76)–(79) illustrate all combinations of necessity and possibility modals with impersonally used *ich* and *du*.

- (76) *Wenn ich als Mannschaft gewinnen will, dann muss ich auch motiviert*  
 if I as team win want then must I also motivated  
*auf den Platz gehen.*  
 on the field go  
 ‘If a team wants to win, they also have to enter the field motivated.’<sup>29</sup>
- (77) *Wenn du als Katze etwas angestellt hast, dann musst du ganz schnell*  
 if you as cat something caused has then must you very fast  
*dafür sorgen, dass es so aussieht, als hätte es der Hund verbochen.*  
 for-that take-care that it so looks as-if had it the dog caused  
 ‘If you, a cat, did something bad then see to it very fast that it looks as though  
 it is the dog’s fault.’<sup>30</sup>
- (78) *Wenn ich als Gewerbetreibender etwas kaufe, kann ich Vorsteuer*  
 if I as trader something buy can I prepaid-tax  
*geltend machen.*  
 lay-a-claim  
 ‘If a trader buys something, he can lay a claim on prepaid tax.’<sup>31</sup>
- (79) *Wenn du als Admin eingeloggt bist, kannst du immer kommentieren.*  
 if you as admin logged-in are can you always comment  
 ‘If one is logged in as an administrator, one can always post a comment.’<sup>32</sup>

To give an adequate analysis of sentences like (74)–(79), the following questions need to be answered:

- Which, and how many operators occur in these sentences? How do they interact with each other?

<sup>28</sup><http://www.sei-standfest.de/fragen-und-antworten/>

<sup>29</sup>Adapted from [http://www.welt.de/print-welt/article532778/Schlechte\\_Argumente\\_fuer\\_den\\_Aufnahmeantrag\\_an\\_die\\_G\\_14.html](http://www.welt.de/print-welt/article532778/Schlechte_Argumente_fuer_den_Aufnahmeantrag_an_die_G_14.html)

<sup>30</sup>Adapted from <http://asilenobiles.beepworld.de/sprueche.htm>

<sup>31</sup><http://de.answers.yahoo.com/question/index?qid=20091023064023AADC6nz>

<sup>32</sup><http://forum.wpde.org/allgemeines/101928-kommentare-zu-bildern.html>

- If there are two (or more) operators present in the sentence, which operator is restricted by the *if*-clause?

In connection with these two questions, I briefly discuss the connection of conditional generic sentences to quantified conditionals, for which similar questions have been investigated in the literature, and try to adapt these solutions. Furthermore, I discuss how the formalization for the two-operator account proposed in Chapter 3 can be extended to the conditional generic sentences found in the data. The discussion of the interaction between the generic operator and co-occurring modals also draws on observations regarding doubly modalized conditionals in Frank (1996).

### A3.2 A modal account for conditionals

Before discussing conditional generic sentences in particular, I first introduce ordinary conditional sentences in English and German, and discuss their modal analysis proposed in Kratzer (1981a, 1986, 1991).

The linguistic form of conditional sentences in English and German involve a biclausal structure, i.e. an “antecedent clause” marked with *if/wenn* and a “consequent clause” in some cases (optionally) marked by *then/dann*.

(80) *If John loses, (then) he will be fired.*

(81) *Wenn Hans verliert, (dann) wird er gefeuert.*  
 if Hans loses then will he be-fired  
 ‘If Hans loses then he will be fired.’

In the literature, four classes of conditionals are distinguished (cf. von Fintel 2011): (i) indicative conditionals, (ii) subjunctive conditionals, (iii) factual conditionals, and (iv) relevance conditionals.<sup>33</sup> These four classes are grouped together based on (i) morphological considerations involving the specific expression of tense, aspect, and mood, (ii) semantic-pragmatic considerations of truth/falsity of the antecedent, and (iii) the perceived connection between the antecedent and the consequent clauses. The following discussion is restricted to indicative and subjunctive conditionals since impersonally interpreted personal pronouns do not occur in factual conditionals and relevance conditionals.

Morphologically, indicative conditionals differ from subjunctive conditionals in the morphological marking of tense, mood, and aspect. In the case of indicative conditionals, verbal mood is indicative, and no restriction is placed on tense marking. Subjunctive conditionals in English are marked by *would* in the consequent, and in

<sup>33</sup>von Fintel (2011) groups counterfactual conditionals with subjunctive conditionals based on their similar morphological marking.

most cases “subjunctive mood” in the antecedent which is indistinguishable from pluperfect tense. In German, subjunctive conditionals are marked by verbs or auxiliaries in Konjunktiv II.

- (82) a. *If John lost, he was fired.* (indicative)  
 b. *If John had lost, he would have been fired.* (subjunctive)
- (83) a. *Wenn Hans verloren hat, dann wurde er gefeuert.*  
 if Hans lost has then was he fired  
 ‘If Hans lost, then he was fired.’ (indicative conditional)
- b. *Wenn Hans verloren hätte, dann wäre er gefeuert worden.*  
 if Hans lost had then would he fired be  
 ‘If Hans had lost, then he would have been fired.’ (subjunctive)

The shared intuition regarding the meaning of both indicative and subjunctive conditional sentences is that they express conditionalized statements: a conditional sentence conveys that the consequent clause is true under the condition that the antecedent clause is true. For example (82-a), the content of *John was fired* is true under the condition that the content of *John lost* is true; similarly for (82-b) and (83).

Indicative and subjunctive conditionals differ in the type of dependence that holds between the truth of the consequent and the truth of the antecedent. This is illustrated relative to the following scenario.

**Scenario:** The last piece of cake has vanished over night. Peter is the only person with access to the cake for whom it can be expected that he would eat it.

- (84) a. *If Peter didn’t eat the cake, someone else did.*  
 b. *If Peter hadn’t eaten the cake, someone else would have.*

In this scenario, the indicative conditional in (84-a) is true: the cake is gone, so someone must have eaten it. The subjunctive conditional in (84-b), however, is intuitively false since it is not necessarily the case—and nothing in the scenario suggests that it should be otherwise—that someone else would have eaten the cake.

Another difference between the indicative and subjunctive variants is whether the assumption in the antecedent, e.g. that Peter ate the cake in (84), is seen as established or not. For indicative conditionals, the truth/falsity of the antecedent is an open issue. In contrast, the content of the antecedent of subjunctive conditionals may be established as false.<sup>34</sup>

<sup>34</sup>Even though one could argue that for the subclass of counterfactual conditionals the antecedents are presupposed to be false, this is not true for subjunctive conditionals in general. A counter-example to this claim is given in (i).

- (i) *If Jones had taken arsenic, he would have shown just exactly those symptoms which he does in fact show.*  
 (cf. Anderson 1951)

Regardless of the morphological and semantic differences between indicative and subjunctive conditionals, a general modal account for both types is proposed in Kratzer (1981a, 1986, 1991).

Based on an observation for adverbs of quantification in Lewis (1975), Kratzer (1981a, 1986, 1989) assumes that *if*-clauses have no conditional meaning of their own. Rather, the function of *if*-clauses is to restrict specific kinds of operators co-occurring in the sentence, e.g. modals, adverbs of quantification, or nominal quantifiers, see (85).<sup>35</sup>

- (85) a. *Wenn Peter eine Maus gesehen hat, muss er Angst gehabt haben.*  
 if Peter a mouse seen has, must he fear have had  
 ‘If Peter saw a mouse, he must have been afraid.’
- b. *Wenn Peter eine Maus sieht, hat er immer Angst.*  
 if Peter a mouse sees, has he always fear  
 ‘If Peter sees a mouse, he is always afraid.’
- c. *Die meisten Studenten bestehen die Prüfung, wenn sie lernen.*  
 the most students pass the exam if they study  
 ‘Most students pass the exam, if they study.’

In light of this view on the function and meaning of *if*-clauses, indicative and subjunctive conditionals with the surface form ‘*if p, then q*’ both share the following tripartite structure.

- (86) Operator (if-clause; matrix clause)

This tripartite structure is a special case of the general tripartite structure found with quantificational expressions in natural language (cf. Partee 1992), see (87).

- (87) Operator (restrictor; scope)

The difference between indicative and subjunctive conditionals boils down to the difference between the operators that occur in the two types of conditionals. To account for this difference, Kratzer extends her semantic analysis for modals, and assumes that the proposition expressed by the *if*-clause restricts the quantificational domain of a modal operator. For instance, in case an *if*-clause restricts a modal as in (85-a), it is used to narrow down the set of accessible worlds to those worlds in which the proposition expressed by the *if*-clause holds.

In Kratzer (1981a), the interpretational rule for conditional sentences of the form ‘if  $\alpha$ , then modal ...’ in (88) is proposed.<sup>36</sup>

<sup>35</sup>The older, opposing view that *if* is a logical operator which introduces the conditional meaning is defended in a recent paper by Gillies (2010).

<sup>36</sup>Note that Kratzer’s (1981a) interpretational rule is non-compositional. A syntacticized, compositional semantics for conditional sentences based on Kratzer’s account is, for example, proposed in von Stechow and Iatridou (2005) and von Stechow and Heim (2011).

- (88) a. The first part of the utterance requires one, and only one, modal base and one, and only one, ordering source to be correct.
- b. If  $f$  is the modal base and  $g$  the ordering source for the first part of the utterance, then  $f$  is the modal base and  $g$  the ordering source for the second part of the utterance.  $f$  is that function from possible worlds to sets of propositions, such that for any world  $w$ ,  $f^+(w) = f(w) \cup \{p\}$ .
- (Kratzer 1981a:68)

The second part of the rule in (88-b) states that the proposition denoted by the *if*-clause is added to the set of propositions in the modal base  $f$ . This effectively reduces the worlds picked by the modal base to those worlds in which the antecedent is true. The resulting set of worlds is then ordered with respect to the ordering source  $g$ . In the notation introduced in Chapter 3, necessity and possibility modals that are restricted by an *if*-clause denoting a proposition  $p$  are formalized as in (89).

- (89) a.  $\forall w' \in O(f \cap p, g, w)[q(w')]$   
 b.  $\exists w' \in O(f \cap p, g, w)[q(w')]$

The notation  $f \cap p$  denotes the restriction of the modal base  $f$  with the proposition  $p$  as defined in (90).

$$(90) \quad f \cap p = \lambda w.[f(w) \cup \{p\}]$$

In German and English indicative conditionals, the operators that are predominantly found are adverbs of quantification and modals. For bare indicative conditionals, i.e. indicative conditionals that contain no overt operator, Kratzer argues for the presence of a covert operator, which is then restricted by the *if*-clause. She suggests two types of covert modal operators that occur in bare indicative conditionals: (i) a covert epistemic necessity modal and (ii) a covert frequency adverbial, which is similar in meaning to *usually* or *always*. Both options are illustrated in (91).<sup>37</sup>

- (91) a. *If he left by noon, he is home by now.* (epistemic necessity)
- b. *If he leaves work on time, he has dinner with his family.* (generic frequency)
- (von Fintel 2011:1525)

The same intuitions arise for the corresponding German conditionals in (92).

- (92) a. *Wenn er zu Mittag gefahren ist, ist er jetzt schon zu Hause.*  
 if he at noon gone is, is he now already at home  
 ‘If he left at noon, he is already home right now.’ (epistemic necessity)

<sup>37</sup>The possibility that a bare indicative conditional contains a covert generic frequency adverbial is mostly ignored in the recent literature. An alternative interpretation of the example in (91) is to say that the *if*-clause restricts the generic operator *Gen*. See below.

- b. *Wenn er rechtzeitig aufhört zu arbeiten, isst er mit seiner Familie zu Abend.*  
 if he in-time stops to work eats he with his family to  
 dinner  
 ‘If he stops working in time, he has dinner with his family.’  
 (generic frequency)

To account for subjunctive conditionals, Kratzer’s account cannot be extended as easily. Since subjunctive conditionals may express counterfactual statements where the antecedent is known to be false in the world of evaluation, adding the antecedent to a circumstantial or an epistemic modal base in both cases problematic.

In the literature, the two most prominent proposals for the meaning of subjunctive conditionals are the two variants of “ordering semantics” proposed by Stalnaker (1975 [1999]) and Lewis (1975), and the two variants of “premise semantics” proposed by Kratzer (1977) and Veltman (1976), and subsequent work based on any of these proposals.

In ordering semantics, the relevant accessible worlds for subjunctive conditionals are those that are most similar to the world of evaluation in which the antecedent holds:<sup>38</sup> subjunctive conditionals express that in all of the worlds in which the proposition denoted by the antecedent is true, and that are most similar to the world of evaluation, the consequent is true. For a subjunctive conditional of the form ‘*if p then q*’, the set of maximally similar *p*-worlds accessible from *w* is denoted by  $MaxSim_{p,w}$ . Hence, the meaning proposed for subjunctive conditionals in ordering semantics is as in (93).<sup>39</sup>

$$(93) \quad \forall w' \in MaxSim_{p,w}[q(w')]$$

In a series of papers, Kratzer develops her premise semantics for subjunctive conditionals (Kratzer 1977, 1981b, 1989, 2005). Her main aim is to solve the problems that arise when a set of premises is updated for counterfactual reasoning since the antecedent is usually inconsistent with the given premise set. The central idea is to start with a complete description of the world of evaluation given by a special operator for subjunctive conditionals (e.g. English *would*), and to then accommodate the antecedent of the subjunctive conditional, which may conflict with parts of this description. Specifically, removing all propositions that stand in conflict with the antecedent. The worlds in which all of the propositions in the derived set hold are the relevant, accessible worlds.<sup>40</sup>

<sup>38</sup>The difference between the accounts in Lewis (1975) and Stalnaker (1975 [1999]) is that Stalnaker assumes that for counterfactuals only one most similar world exists whereas Lewis argues that counterfactuals, like indicative conditionals, are evaluated relative to a set of accessible worlds.

<sup>39</sup>The notation  $MaxSim_w$  is intended to denote the set of maximally similar worlds to the world of evaluation *w*.

<sup>40</sup>Lewis (1981) shows that ordering semantics and premise semantics as proposed by Kratzer are equivalent. This discussion and Kratzer’s specific formalization will not be taken up, and reviewed at

In sum, in Kratzer's modal account for conditionals, indicative and subjunctive conditionals are treated uniformly, based on the assumption that *if*-clauses always restrict overt or covert co-occurring operators. The differences between indicative and subjunctive conditionals is attributed to the different kinds of operators that are assumed to occur in the two types of conditionals.

### A3.3 Analyses of conditional generic sentences

As far as I know, conditional generic sentences have not been studied as intensively as other types of generic sentences or conditional sentences. Discussions can be found in Carlson (1979), Farkas and Sugioka (1983), ter Meulen (1986), and Krifka et al. (1995) at various levels of detail.<sup>41</sup>

Carlson (1979) argues that conditional generic sentences with bare plural subjects are equivalent to sentences in which the bare plural is restricted by a corresponding relative clause. That is, (94-a) is assumed to be equivalent to (94-b).

- (94) a. *Donkeys are stubborn if they have green eyes.*  
 b. *Donkeys that have green eyes are stubborn.*

Farkas and Sugioka (1983) point out that the correspondence between (94-a) and (94-b) is not observed for generic sentences in general. In conjoined conditional generic sentences in which the second conjunct contains an anaphoric pronoun that co-refers with the subject of the first conjunct, the substitution does not succeed. This is illustrated in (95).

- (95) a. *Donkeys are stubborn, if they have green eyes, and they are stupid, if they have brown eyes.*  
 b. *#Donkeys that have green eyes are stubborn and they are stupid, if they have brown eyes.*

Alice ter Meulen (1986) discusses Farkas and Sugioka's observation, and argues that the non-well-formedness of (95-b) results from constraints on anaphoric reference: in contrast to *if*-clauses, relative clauses as syntactic parts of noun phrases are visible to anaphoric reference. Since the relative clause and the second *if*-clause in (95-b) are inconsistent, (95-b) is not semantically well-formed. Hence, (95) does not constitute an observation about conditional generic sentences as such. If the second conjunct in (95-a) is replaced by a different continuation, the *if*-clause can again be substituted by a corresponding relative clause, see (96).

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this point since the question regarding an adequate analysis for subjunctive conditionals is orthogonal to the discussion about conditional generic sentences.

<sup>41</sup>For details on modality and genericity see Chapter 3.

- (96) a. *Donkeys are stubborn, if they have green eyes, and they get worse, if you beat them.*  
 b. *Donkeys that have green eyes are stubborn and they get worse, if you beat them.*

For conditional generic sentences, [ter Meulen \(1986\)](#) proposes that the *if*-clause restricts the situations and individuals that are generalized over. A schematic representation of the proposed underlying structure for conditional generic sentences of the form ‘*Fs are Gs, if they are Ks*’ is given in (97).<sup>42</sup>

$$(97) \quad \text{Gen}(F \ \& \ K; G)$$

The analysis for conditional generic sentences proposed in [Krifka et al. \(1995\)](#) agrees with [ter Meulen’s \(1986\)](#) analysis in two points: (i) conditional generic sentences contain a covert generic operator *Gen*, and (ii) the *if*-clause is interpreted in the restrictor of *Gen*. For instance, the conditional generic sentence in (98-a), is formalized as (98-b).

- (98) a. *A cat is infertile if it is tricolored.*  
 b.  $\text{Gen}[x;](x \text{ is a cat} \ \& \ x \text{ is tricolored}; x \text{ is infertile})$   
 ([Krifka et al. 1995:33](#))

In the rest of this subsection, I combine [ter Meulen’s \(1986\)](#) and [Krifka et al.’s \(1995\)](#) proposal with [Drewery’s \(1998\)](#) account, and discuss issues that arise for this proposal.

A naive combination of the three accounts predicts that the interpretation for conditional generics of the form ‘*Fs are Gs, if they are Ks*’, i.e. containing no overt modal, is as in (99).<sup>43</sup>

$$(99) \quad \forall w'[w \sim_{F\&K,G} w' \rightarrow \forall x[F(x)(w') \ \& \ K(x)(w') \ \& \ N_{F\&K,G}(\langle x, w' \rangle)(w') \rightarrow G(x)(w')]]$$

For (98-a), the following truth-conditions are proposed.

$$(100) \quad \forall w'[w \sim_{\text{cat} \ \& \ \text{tricolored}, \text{infertile}} w' \rightarrow \forall x[\text{cat}(x)(w') \ \& \ \text{tricolored}(x)(w') \ \& \ N_{\text{cat} \ \& \ \text{tricolored}, \text{infertile}}(\langle x, w' \rangle)(w') \rightarrow \text{infertile}(x)(w')]]$$

The assumption that *if*-clauses always restrict the generic operator defended in [ter Meulen \(1986\)](#) and [Krifka et al. \(1995\)](#) predicts that the property *K* in (99) that is contributed by the predicate in the *if*-clause has the same effect on the meaning of the

<sup>42</sup>Working in an entirely different framework, i.e. situation semantics in the system of [Barwise and Perry \(1983\)](#), [ter Meulen](#) does not subscribe to any of the particulars implied by a modal interpretation of the formula in (97) as proposed below. For her original account see [ter Meulen \(1986\)](#).

<sup>43</sup>For the remainder of this section, I adopt the proposal for the interpretation of the generic operator in [Drewery \(1998\)](#) adapted in Section 3.3.

generic sentence as other modifiers that restrict the subject property  $F$ , e.g. adjectives and relative clauses.

This prediction is not borne out, though (*pace* ter Meulen's 1986 re-interpretation of Farkas and Sugioka's 1983 counterexample). While for some conditional generic sentences, the substitution does not seem to result in a change in truth-conditions, for other conditional generic sentences, substituting the *if*-clause with a restrictive relative clause causes a change. Consider the pair of sentences in (101).<sup>44</sup>

- (101) a. *Wenn ich als Sparer mein Geld in Staatsanleihen investiere,*  
 if I as saver my money in government-stocks invest  
*verliere ich an Kaufkraft.*  
 lose I buying-power  
 'If a saver invests his money in government stocks, he loses buying power.'<sup>45</sup>
- b. *Ich verliere als Sparer, der sein Geld in Staatsanleihen*  
 I lose as saver who my money in government-stocks  
*investiert, an Kaufkraft.*  
 invest buying-power  
 'A saver who invests his money in government stocks loses buying power.'

Intuitively, the conditional generic sentence in (101-a) still talks about savers in general, whereas the generic sentence containing the relative clause in (101-b) exclusively talks about savers that invest in government bonds. In addition, substituting the *wenn*-clause in (101-a) with the restrictive relative clause in (101-b) seems to have two effects: First, the direct link between investing in government stocks and losing buying power is lost. That is, in (101-b), losing buying power is conveyed to happen for savers that buy government stocks in general, but buying government stocks is not necessarily seen as the grounds for losing buying power. The second effect is that the *wenn*-clause in (101-a) does not convey anything about whether savers that will lose buying power if they buy government stocks have already bought these government stocks. In contrast, the relative clause in (101-b) states a generalization about those savers that in fact bought government stocks.

Analogous considerations regarding the behavior of *if*-clauses can be found in the literature on quantified conditionals (cf. von Stechow and Iatridou 2002; Geurts 2004; Huitink 2008). The central problem discussed for quantified conditionals is whether an *if*-clause in a conditional containing a nominal quantifier can, or should be analyzed as restricting the nominal quantifier (cf. von Stechow and Iatridou 2002; Geurts 2004; Huitink 2008; Klinedinst 2011). The data that is considered regarding this question are sentence pairs such as in (102)—just as in the discussion about conditional generic

<sup>44</sup>Note that for impersonally interpreted pronouns, restrictive relative clauses need to be placed inside the co-occurring *als*-phrase. Cf. Appendix A1.

<sup>45</sup>Taken from an article dated May 17, 2011 in <http://www.daserste.de/plusminus/> (unavailable)

sentences above, it is tested whether the *if*-clause can be substituted by a corresponding relative clause.

- (102) a. *Every student will succeed if he studies hard.*  $\approx$   
 b. *Every student who studies hard will succeed.*  
 (von Fintel and Iatridou 2002:1)

In earlier literature on quantified conditionals (cf. Higginbotham 1986), it is argued that quantified conditionals are always equivalent to the corresponding sentences in which the domain of the nominal quantifier is restricted by a relative clause. This apparent correspondence between sentence pairs such as in (102) has been contested on the basis of quantified conditionals with non-universal nominal quantifiers.

- (103) a. *Most students but not all will succeed if they study hard.*  $\not\approx$   
 b. *Most students but not all who study hard will succeed.*  
 (von Fintel and Iatridou 2002:11)

The sentences in (103-a) and (103-b) do not express the same truth-conditions. Example (103-a) is true in a scenario in which most students will succeed, but these are in fact all of the students that study hard. In this scenario, (103-b) is false, however.

To account for the contrast in (102) and (103), von Fintel and Iatridou (2002) propose that quantified conditionals need to be assigned the general structure in (104).

- (104) Quantifier<sub>x</sub> [R<sub>x</sub>]Restrictor [if<sub>w</sub> P<sub>w,x</sub> Q<sub>w,x</sub>]Scope  
 (von Fintel and Iatridou 2002:10)

In other words, von Fintel and Iatridou argue that *if*-clauses never restrict nominal quantifiers.<sup>46</sup>

Given this general structure, the problem posed by quantified conditionals can be compared to the problem posed by conditional generic sentences. In fact, the account proposed for quantified conditionals in von Fintel and Iatridou (2002) is reminiscent of the account proposed for conditional generic sentences in Farkas and Sugioka (1983).

Farkas and Sugioka's (1983) account differs from the accounts in ter Meulen (1986) and Krifka et al. (1995) in various points. In addition to following Carlson (1977, 1979) in interpreting indefinite noun phrases in generic sentences as kind denoting expressions, they assume that a covert adverbial *generally* is present, which quantifies over an object-level variable. The domain of quantification is restricted to members

<sup>46</sup>von Fintel and Iatridou (2002) argue that *if*-clauses always have an element of "iffiness", i.e. they express that the content of the *if*-clause is in question. Since this is not observed for restrictive relative clauses, von Fintel and Iatridou's observation can be interpreted as follows: if an *if*-clause is paraphrased by a restrictive relative clause, the paraphrase always loses some of the information contributed by the *if*-clause.

of the kind-entity denoted by the subject. The simple generic sentence in (105-a) is assigned the truth-conditions in (105-b).

- (105) a. *Dogs are intelligent.*  
 b.  $G((\text{intelligent}(x^o))(x^o : \lambda z^o.R(z^o, d^k)))$   
 (Farkas and Sugioka 1983:249f)

The operator  $G$  represents the covert adverbial *generally*,  $x^o, z^o$  are object-level variables, and  $d^k$  is the kind-individual denoted by *dogs*. The relation  $R$  relates kind- and object-level entities iff the object-level entity is a member of the kind-entity (cf. Carlson 1977). In sum, the formula in (105-b) states that generally, individuals that are members of the kind *dog* are intelligent.

When a generic sentence contains an *if*-clause, Farkas and Sugioka assume that the scope of the  $G$ -operator contains a conditional of the form ‘*if p then q*’, written as ‘ $p \text{ c } q$ ’. The connector ‘ $c$ ’ is defined as a modification of material implication:

- (106)  $p \text{ c } q$  is true iff whenever  $p$  is true,  $q$  is true  
 in case  $p$  is false, by some pragmatic principle, the situation is seen as irrelevant for determining the truth-value of the implication

In Farkas and Sugioka’s account, (107-a) is analyzed as in (107-b).

- (107) a. *Dogs are intelligent, if they have blue eyes.*  
 b.  $G((\text{blue eyes}(x^o) \text{ c } \text{intelligent}(x^o))(x^o : \lambda z^o.R(z^o, d^k)))$   
 (Farkas and Sugioka 1983:250)

This proposal for conditional generic sentences can be translated into the form proposed by Krifka et al. (1995) if the following assumptions are made: (i)  $G$  is interpreted as  $Gen$ , (ii) the domain restriction on  $x^o$  is interpreted as the restrictor of  $Gen$ , (iii) instead of denoting a kind-entity, the indefinite noun phrase contributes a property, and (iv) the conditional expression ‘ $p \text{ c } q$ ’ is interpreted as an indicative conditional as introduced above—written here as  $\Box(p; q)$ . Given these assumptions, the translation of (107-b) comes out as (108).

- (108)  $Gen[x;](\text{dog}(x); \Box(\text{blue-eyes}(x); \text{intelligent}(x)))$

The proposal in (108) is close to the proposal from von Stechow and Iatridou (2002) in (104). Given the similar considerations regarding the possibility to paraphrase the *if*-clause with a relative clause, this similarity seems to suggest that (104) and (108) are on the right track.

However, von Stechow and Iatridou’s proposal in (104) is criticized in Geurts (2004) and Huitink (2008). Huitink argues that for *if*-clauses that occur in quantified conditionals, two types—restrictive and non-restrictive *if*-clauses—need to be distinguished. Re-

restrictive *if*-clauses can be paraphrased by restrictive relative clauses; for non-restrictive *if*-clauses, this option is unavailable.

To capture both types of *if*-clauses, one has to allow for variability in their analysis: sometimes *if*-clauses need to be analyzed as modifying a nominal quantifier, as for (109), and sometimes as restricting a covert operator in the scope of the nominal quantifier, as for (103).

- (109) a. *Most letters are answered if they are shorter than 5 pages.*  $\approx$   
 b. *Most letters that are shorter than 5 pages are answered.*  
 (Huitink 2008:189)

This means that only non-restrictive *if*-clauses should be analyzed as proposed by von Fintel and Iatridou (2002) in (104).

Huitink's (2008) observation for quantified conditionals also has an effect on the analysis of conditional generic sentences since it can be replicated for these sentences. In example (101), the *if*-clause is non-restrictive. Hence, substitution with a restrictive relative clause fails. Example (110), in contrast, has to be interpreted as containing a restrictive *if*-clause.

- (110) *Wenn man einen Hamster hat, muss man sich um ihn kümmern.*  
 if one a hamster has must one oneself of him take-care  
 'If one has a hamster, one has to take care of him.'

The *wenn*-clause in example (110) restricts the set of people for whom the general rule is stated to those people that have a hamster. Hence, a paraphrase with a restrictive relative clause should be possible. However, in absence of a suitable *als*-phrase, impersonally used personal and impersonal pronouns can only be restricted with a *wenn*-clause; relative clauses are not an option. The *if*-clause in example (110) can be paraphrased with an *als*-phrase, though, see (111).

- (111) *Man muss sich als Hamsterbesitzer um seinen Hamster kümmern.*  
 one must oneself as hamster-owner of one's hamster take-care  
 'As a hamster owner, one has to take care of one's hamster.'

The discussion in this subsection suggests that two formalizations for conditional generic sentences are needed depending on the type of *if*-clause. The formalization in (112) (repeated from above) captures conditional generic sentences with restrictive *if*-clauses.

- (112)  $\forall w'[w \sim_{F\&K,G} w' \rightarrow$   
 $\forall x[F(x)(w') \& K(x)(w') \& N_{F\&K,G}(w)(\langle x, w' \rangle) \rightarrow G(x)(w')]]$

For conditional generic sentences with non-restrictive *if*-clauses, I assume that the *if*-clause restricts an additional covert epistemic necessity operator in the scope of the generic operator.<sup>47</sup> I propose the truth-conditions in (113).

$$(113) \quad \forall w'[w \sim_{F, \square(K; G)} w' \rightarrow \forall x[F(x)(w') \ \& \ N_{F, \square(K; G)}(\langle x, w' \rangle)(w') \rightarrow \forall w'' \in O(f \cap K(x), \mathbf{g}, w')[G(x)(w'')]]]$$

The notation  $\square(K; G)$ , which was also used above, formalizes the meaning of an indicative conditional for which  $K(x)$  is the antecedent proposition and  $G(x)$  the consequent proposition, i.e. it is to be read as an abbreviation for the formula in (114).<sup>48</sup>

$$(114) \quad \forall w'' \in O(f \cap K(x), \mathbf{g}, w')[G(x)(w'')]$$

For conditional generic sentences that contain an overt modal element in the consequent, as illustrated in (76)–(79), additional considerations are needed, which are briefly addressed in the following subsection.

### A3.4 Conditional generic sentences and overt modals

Conditional generic sentences containing overt modals are, as far as I am aware, even less well studied than “bare” conditional generic sentences. Of those authors cited in the previous subsection, only Krifka et al. (1995) consider additional modal elements in the consequent of a conditional generic sentence.

In example (115-a) taken from Krifka et al., the conditional generic sentence contains the overt modal *should*.

- (115) a. *If he<sub>i</sub> can't afford to rent an entire house, then a new faculty member<sub>i</sub> should rent a simple room to save money.*  
 b.  $\text{Gen}(\neg \diamond x \text{ affords to rent an entire house } \& \ x \text{ is a new faculty member ; } x \text{ should rent a simple room to save money})$   
 (Krifka et al. 1995:107)

In the formalization in (115-b) that is attributed to Heim (1988 [1982]), the modal is interpreted in the scope of the generic operator. The *if*-clause is interpreted in the restrictor of *Gen*.

Heim's analysis is compatible with the results on generic sentences containing overt modals in Chapter 3. There, it was observed that the generic operator *Gen* always scopes over co-occurring non-epistemic modals. Since the function of *if*-clauses is to restrict operators, the interaction between *Gen* and an overt modal in the consequent

<sup>47</sup>As discussed in Section 3.5, epistemic modals show both relative scope orderings with the generic operator.

<sup>48</sup>Note that the variable  $x$  in (114) is free, but since (114) is part of (113),  $x$  will be bound by the universal quantifier over individual variables that is introduced by *Gen*.

of a conditional generic sentences is in fact expected to show the same restrictions as in the non-conditional cases. These considerations are taken as the point of departure for this last subsection.

While Heim's analysis of (115-a) seems to capture the meaning of (115-a), two aspects of these types of examples need to be investigated further: First, as shown in the previous subsection, *if*-clauses do not always restrict the generic operator. For these cases, it needs to be determined whether the *if*-clauses restrict the overt modals in the consequents of the conditional generic sentences, or whether the presence of another covert modal needs to be assumed. The second consideration concerns the interpretation of the overt modals in those cases in which the *if*-clause restricts the generic operator.

In the following discussion, I address both points of consideration starting with the cases in which the *if*-clause restricts the generic operator: in examples like (116), the restriction that is added to the generic operator also seems to be inherited by the overt modal in the scope of the generic operator.

- (116) *Wenn ich als Mannschaft gewinnen will, dann muss ich auch motiviert auf den Platz gehen.*  
 if I as team win want then must I also motivated  
 on the field go  
 'If a team wants to win, they also have to enter the field motivated.'<sup>49</sup>

If the *wenn*-clause in (116) restricts only the generic operator, the meaning of the sentence should be paraphrasable as (117-a). However, the paraphrase that intuitively reflects the meaning of (116) is the one in (117-b).

- (117) a. For all teams that want to win and that are non-exceptional with respect to the obligation to enter the field motivated, it is the case that they have to enter the field motivated.  
 b. For all teams that want to win and that are non-exceptional with respect to the obligation to enter the field motivated, it is the case that **if they want to win**, they have to enter the field motivated.

That is, the obligation to enter the field motivated is also conditionalized to those cases in which the non-exceptional teams want to win.

How can this be adequately captured? A similar problem is addressed in the literature for conditional sentences that involve two or more modal operators, e.g. in the work on doubly modalized conditional sentences in Frank (1996), Geurts (2004), and Zvolensky (2002).

Frank's (1996) discussion of these cases is part of a larger discussion about the

<sup>49</sup>Adapted from [http://www.welt.de/print-welt/article532778/Schlechte\\_Argumente\\_fuer\\_den\\_Aufnahmeantrag\\_an\\_die\\_G\\_14.html](http://www.welt.de/print-welt/article532778/Schlechte_Argumente_fuer_den_Aufnahmeantrag_an_die_G_14.html)

analysis of deontic conditionals. She argues that Kratzer's account as it is does not adequately capture indicative deontic conditionals. Kratzer's proposal predicts that the *if*-clause in (118) should restrict the overt deontic modal *must*.

(118) *If Peter drinks Pepsi, then he must drink Pepsi.*

This, however, predicts that (118) should express the tautology that is schematically given in (119).

(119)  $\Box(p; p)$

where  $p$  is the proposition denoted by *Peter drinks Pepsi*

On the basis of these types of examples, Frank argues that Kratzer's (1981a) account for indicative conditionals is too restrictive. That is, Kratzer's rule of interpretation in (88) (see above) suggests that as soon as an overt modal is present in the consequent of a conditional, the presence of an additional covert modal that is restricted by the *if*-clause is excluded. Frank argues that this view on conditionals as involving at most one operator that is restricted by the *if*-clause does not only lead to problems for indicative deontic conditionals in (118), but also for overtly doubly modalized conditional sentences. The interpretation of two overt modals should not be combined to give one single modal base and one single ordering source. Instead, Frank argues, multiple modals need to be interpreted independently and in succession, as suggested by their surface order. For instance, the examples in (120) need to be interpreted with two modals that are stacked in surface order.

(120) a. *If Max stays with his Grandma, he **might be allowed** to take the dog for a walk.*

$\rightsquigarrow$  'if  $p$  then  $\Diamond\Diamond q$ '

b. *If Max stays with his Grandma, he **might have to** take the dog for a walk.*

$\rightsquigarrow$  'if  $p$  then  $\Diamond\Box q$ '

(Frank 1996:49)

Regarding the interaction of the two modals in (120), Frank proposes that the embedded modal is interpreted relative to the higher modal. In particular, the modal base of the embedded modal is interpreted as anaphoric to the modal base of the higher modal. For the examples in (120), she proposes the following interpretation in (121).<sup>50</sup>

<sup>50</sup>Frank (1996) originally gives the semantic contribution of a modal in the notation, which I translated for reasons of readability.

(i)  $\begin{array}{l} \text{modal force} \\ \text{ordering source} \\ \text{modal base} \end{array}$

- (121) a.  $possible_{f^+}^{\emptyset}(possible_{f^+}^g q)$   
 b.  $possible_{f^+}^{\emptyset}(necessary_{f^+}^g q)$

where  $f$  is an epistemic modal base,  $g$  a deontic ordering source, and

$$f^+ = f \cup p$$

(Frank 1996:50)

I now return to the formalization of conditional generic sentences with overt modal elements in the consequent clauses, and try to combine the insights in Frank (1996) with the proposal for “bare” conditional generic sentences from the previous subsection. Examples (122) and (123) give the proposals for the two alternative interpretations for conditional generic sentences with overt modals—depending on the type of *if*-clause.

In (122), the *if*-clause restricts the generic operator *Gen*, and the modal is interpreted in the scope of *Gen*.

- (122) a.  $\forall w'[w \sim_{F\&K,\Box G} w' \rightarrow \forall x[F(x)(w') \& K(x)(w') \& N_{F\&K,\Box G}(\langle x, w' \rangle)(w') \rightarrow \forall w'' \in O(f, g, w')[G(x)(w'')]]]$   
 b.  $\forall w'[w \sim_{F\&K,\Diamond G} w' \rightarrow \forall x[F(x)(w') \& K(x)(w') \& N_{F\&K,\Diamond G}(\langle x, w' \rangle)(w') \rightarrow \exists w'' \in O(f, g, w')[G(x)(w'')]]]$

The formalization in (123) assumes that the *if*-clause restricts the overt modal in the consequent of the conditional.

- (123) a.  $\forall w'[w \sim_{F,\Box(K;G)} w' \rightarrow \forall x[F(x)(w') \& N_{F,\Box(K;G)}(\langle x, w' \rangle)(w') \rightarrow \forall w'' \in O(f \cap K(x), g, w')[G(x)(w'')]]]$   
 b.  $\forall w'[w \sim_{F,\Diamond(K;G)} w' \rightarrow \forall x[F(x)(w') \& N_{F,\Diamond(K;G)}(\langle x, w' \rangle)(w') \rightarrow \exists w'' \in O(f \cap K(x), g, w')[G(x)(w'')]]]$

In Chapter 3, meaning postulates were proposed to capture that overt non-epistemic modals in generic sentences depend on the world of evaluation even though they are interpreted in the scope of *Gen*. The adaptation of the original formulation given in Chapter 3 to fit the second formalization in (123) is given in (124).

- (124) a.  $\forall w'[w \sim_{F,\Box(K;G)} w' \rightarrow g(w) = g(w')]$   
 b.  $\forall w'[w \sim_{F,\Diamond(K;G)} w' \rightarrow g(w) = g(w')]$

For the first interpretation of conditional generic sentences in (122), the observation that the *if*-clause also has an effect on the embedded modal needs to be captured in addition to the dependence on the world of evaluation. Based on Frank’s (1996) proposal above, I propose the adapted meaning postulates in (125) for the formalizations in (122).

- (125) a.  $\forall w'[w \sim_{F\&K,\Box G} w' \rightarrow g(w) = g(w') \& \forall x[\langle x, w' \rangle \in N_{F\&K,\Box G}(w') \rightarrow [\lambda w'.K(x)(w'')] \in f(w')]]]$

- b.  $\forall w'[w \sim_{F\&K,\diamond G} w' \rightarrow \mathbf{g}(w) = \mathbf{g}(w') \ \&$   
 $\forall x[\langle x, w' \rangle \in N_{F\&K,\square G}(w') \rightarrow [\lambda w'.K(x)(w'')] \in \mathbf{f}(w')]]$

So in sum in this part of the appendix, formalizations for the interpretations of conditional generic sentences with and without overt modals were proposed. Both proposals depend on the restrictive behavior of *if*-clauses argued for by Kratzer (1981a, 1986, 1989). Furthermore, the similarities between *if*-clauses in quantified conditionals and in conditional generic sentences were determined: *if*-clauses sometimes seem to restrict the higher scoping generic operator, and sometimes the lower scoping overt modal. Two formalizations for these two distinct possibilities were proposed.

The account presented in this subsection opens up further questions regarding the formalization of conditional generic sentences, which, for reasons of space, will have to stay unanswered at the moment, though.

- Can it be derived from the lexical material occurring in the sentence which of the two interpretational variants of conditional generic sentences is needed?
- Do the two interpretations adequately capture the data? To give an answer to this question, more data needs to be considered in detail, and it needs to be determined what it means for an individual to be relevantly non-exceptional relative to a conditional property.
- How many covert operators—in addition to *Gen*—may be assumed to occur in conditional generic sentences?

The last question is connected to Frank's (1996) treatment of deontic conditionals. Frank extends her analysis of conditionals containing two or more overt modals to deontic conditionals containing a single modal. Her central idea is that whenever a conditional contains an overt deontic modal in the consequent, a covert epistemic modal has to be assumed which has scope over the deontic modal. The modal base of the lower overt modal is again assumed to be anaphoric to the modal base of the higher covert modal. This accounts for the problematic example in (118) since instead of the tautologous meaning in (119), it is formalized as in (126).

- (126)  $\square_{\text{epistemic}}(p; \square_{\text{deontic}}p)$   
 where  $p$  is the proposition denoted by *Peter drinks Pepsi*

For further details of this account, see Frank (1996).<sup>51</sup>

A detailed discussion of these issues requires detailed investigations regarding the parallel between conditional generics and quantified conditionals, on the one hand, and conditional generics and doubly modalized conditionals, on the other hand. These investigations are beyond the scope of this thesis, and have to be left for further research.

<sup>51</sup>The proposal in Frank (1996) is criticized in Zvolensky (2002), who argues against adopting a Kratzerian account for indicative deontic conditionals in general. For details cf. Zvolensky (2002).



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