Slovenian Perfective and Imperfective Explicit Performative Utterances

MSc Thesis *(Afstudeerscriptie)*

written by

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To my parents

Abstract

Utterances of sentences such as *I promise to come* can in the right circumstances bring about the act named by the main verb, a promise in this case. They are called explicit performative utterances, and in English they typically appear with the simple present tense (perfective aspect) and not with the progressive (*?I'm promising to come*), a subtype of the imperfective aspect. Slovenian performative utterances are intriguing because a verb like *promise* can be used both in the perfective and the imperfective form to bring about the act of promising. The Slovenian imperfective is similar to the English progressive in that it can present events in progress (it does not entail the event's completion). Why is it sufficient in Slovenian (but not in English) to be in the process of promising to also promise?

The thesis tries to answer this question by taking the relevant distinction between the Slovenian imperfective and the English progressive to be in that the former denotes a possibly incomplete event and the latter denotes a necessarily incomplete one. This distinction is incorporated in a self-referential account: performative verbs are essentially anaphoric expressions (like pronouns, for example) that can successfully bind to an accessible communicative event, such as the actual utterance event. The thesis also includes an empirical investigation of Slovenian performativity.

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Chapter 1

Introduction

English performative utterances typically appear in the simple present tense (perfective aspect) rather than in the progressive, a subtype of the imperfective aspect Comrie (1976):

(1) a. *I promise to come.*
b. ? *I'm promising to come.*

This is not entirely surprising given that the imperfective aspect can present events in progress (this is in fact a hallmark of the progressive aspect). Being in the process of making a promise cannot in itself guarantee that one has made a promise (because it does not guarantee that the event of making a promise has been completed). Nevertheless, Slovenian uses both the perfective and the imperfective aspect with performative verbs like *promise*:[1]

(2) a. *Obljubim, da bom prišel.*
promise$_{1SG.PRE.PF}$ that AUX come$_{PTC.PF}$
'I promise to come.'
b. *Obljubljam, da bom prišel.*
promise$_{1SG.PRE.IPF}$ that AUX come$_{PTC.PF}$
'I promise to come.'

The well-known philosophical tradition sprouting from the seminal work by Austin (1962) and Searle (1989) has focused on certain kinds of questions. For example, on why the utterance of *I hereby promise to come* can in the right circumstances bring about a promise, while the utterance of *I hereby butter the*

[1]Abbreviations: AUX (auxiliary), IPF (imperfective), PF (perfective), PRE (present), SG (singular), PTC (participle), REFL (reflexive).

toast cannot normally butter a toast. This type of literature has often taken it for granted that performative utterances are utterances of sentences that denote complete events.

The Slovenian tradition, on the other hand, started with a purely linguistic debate, sparked in 1892 by Stanislav Škrabec, on the correct use of the perfective and the imperfective aspect in the present (Žagar, 2003, 2011; Žagar & Grgič, 2011). One of the questions asked at the time, and addressed in this paper, is why it is sufficient in Slovenian to be in the process of promising to also promise. In other words, how to guarantee that a promise has been made when the imperfective present denotes an event that is not necessarily complete.

This thesis studies explicit performative utterances. We follow Searle (1989) in understanding explicit performative utterances as utterances of sentences such as *I promise to come* where the main verb, *promise*, in the right circumstances names the act (a promise) performed by simply uttering the sentence. Other examples include *I order you to leave*, *I regret it*, *I claim that he did it*, and *I declare war*. Verbs such as *promise*, *order*, *regret*, *claim*, and *declare* are called 'performative verbs'. I will use the term 'performative sentence' for any sentence whose main verb is a performative verb. We thus do not examine cases such as *I will come* (promise), *Go away!* (order) or *I must thank you* (thanking). A performative sentence can be *used* performatively, as a 'performative utterance'.

The overall goal of this thesis is to present Slovenian performative utterances as well as work towards their formalisation. The thesis can therefore be divided into two parts: an empirical part (§2–§3) and a theoretical part (§4–§5).

In the empirical part I first touch upon the very basic notions needed to understand the Slovenian aspectual and morphological system (§2). I then present Slovenian performativity from two points of view (§3). First, I discuss the lexical aspectual properties of Slovenian performative verbs (§3.1). The goal is to show that they do not belong to a single lexical class. Second, I look at the distribution of grammatical aspect (perfective and imperfective) in performative utterances (§3.2). I first look at a small corpus sample to examine whether perfective and imperfective forms of the same verb are available (§3.2.1), and then proceed to a discussion of what the difference in meaning between the two forms is when they are both available (§3.2.2).

In the theoretical part I first discuss the literature in light of Slovenian performativity (§4). After briefly presenting some of the relevant concepts (§4.1), I discuss a recent proposal by Condoravdi & Lauer (2013) (§4.2) and explain why imperfective performativity poses a problem (§4.3). The first step towards a solution is understanding the distinction between the Slovenian imperfective and the English progressive. I propose that the crucial difference lies in the

fact that the Slovenian imperfective denotes a possibly incomplete event, while the English progressive denotes a necessarily incomplete one. I argue that an independent account of the self-referential character of performative utterances suffices to remedy the problem of imperfective performativity.

In §5 I put forth a concrete proposal of how self-reference can be derived by modifying the lexical entry of a performative verb. The idea in a nutshell is that performative verbs are essentially anaphoric expressions (like pronouns, for example) that can successfully bind to an accessible communicative event, such as the actual utterance event. I first present the general idea in §5.1, discuss anaphoric properties of performative verbs in §5.2 and put forth the proposal in §5.3. I first spell out the toy system and then show how to obtain the self-referential reading that leads to a performative utterance. In §5.4 I discuss future work and offer some thoughts on deriving non-performative utterances of performative sentences.

Chapter 2

Aspectual Preliminaries

This section reviews the relevant aspectual terminology and briefly introduces the Slovenian aspectual system. All formal characterisations are postponed until later. The reader familiar with the basics of Slavic aspect may skip this section.

2.1 Aspectual Terminology

Aspectuality comprises grammatical (viewpoint) and lexical (situation, Aktionsart) aspect. The **perfective** and the **imperfective** aspect are types of grammatical aspect. Traditionally, the perfective views events as whole, while the imperfective zooms in on their internal structure (Comrie, 1976).[1] Lexical aspect, on the other hand, is concerned with types of 'eventualities' and draws on the semantics of the verb and its arguments. The basic distinction between states and events can be further refined. Vendler's (1957) classification distinguishes between three types of events: **activities** (*play tennis*), **accomplishments** (*eat an apple*), and **achievements** (*reach the top*). Using the notions of duration and telicity (whether the event builds towards an inherent endpoint) we can roughly characterise activities as durative atelic, accomplishments as durative telic, and achievements as non-durative telic (Smith, 1997).

2.2 A Note on the Slovenian Aspectual System

Modern Slovenian has three tenses: past, present, and future. The distinction between the perfective and the imperfective form of a given verb is preserved in all three; here is an example:

[1] A more recent and formal conceptualisation of the two can be found in Altshuler (2014).

Form	Tense	Aspect	Rough Meaning
prepisal je	past	PF	*he copied*
prepisoval je	past	IPF	*he was copying*
prepiše	present	PF	*he copies*
prepisuje	present	IPF	*he is copying*
prepisal bo	future	PF	*he will copy*
prepisoval bo	future	IPF	*he will be copying*

Figure 2.1: Slovenian *copy* in the three tenses

While traditional grammars, e.g. Toporišič (2000), distinguish between monoaspectual and biaspectual verbal forms, we will only consider verbs with monoaspectual forms, i.e. forms for which it is clear whether they are perfective or imperfective. (Biaspectual verbal forms, such as *telefonirati* (phone), are sometimes argued to have both aspects.) I will often simplify and use the terms verb and predicate to refer to individual verbal forms. For example, I might refer to *prepisati*$_{\text{PF}}$ (copy) and *prepisovati*$_{\text{IPF}}$ (copy) as two verbs, a perfective one and an imperfective one, rather than correctly referring to them as two verbal forms of one verb. I will also use subscripts to indicate grammatical aspect.

Monoaspectual verbal forms can be distinguished further. There are unprefixed or **simplex** (Dickey, 2003) forms, such as *pisati*$_{\text{IPF}}$ (write), and **complex** forms, such as *na-pisati*$_{\text{PF}}$ (write), *s-pisati*$_{\text{PF}}$ (write/compose), *pre-pisati*$_{\text{PF}}$ (copy) or *na-pre-pisati se* (have enough of copying), the latter with two prefixes.[2] Simplex forms are typically imperfective, see Toporišič (2000) for a list of perfective exceptions, whereas complex forms can be either.

To distinguish a simplex imperfective from a complex one, the term **secondary imperfective** is used. To illustrate, *za-li-va-ti*$_{\text{IPF}}$ (flood) is a secondary imperfective formed by imperfective suffixation from *za-li-ti*$_{\text{PF}}$ (flood), which is in turn formed by perfective (and also lexical) prefixation from the simplex imperfective *li-ti*$_{\text{IPF}}$ (pour), example due to Žaucer (2009). While lexical and grammatical aspect are often interrelated in Slavic, secondary imperfectivisation has been seen as 'akin to English progressivization' (Žaucer, 2009), see the references therein.

There are two main processes involved in the formation of complex forms: imperfective suffixation and **perfective prefixation**.[3] Perfective prefixation, see

[2]Not all verbs have more than one form. Dickey (2003: 183) calls such verbs imperfectiva tantum (imperfective form only) and perfectiva tantum (perfective form only). The former type includes many states and activities and the latter one many achievements (*ibid.*).

[3]Disregarding semelfactive suffixation.

Toporišič (2000), is typically telicizing (yielding accomplishments or achievements) and is often accompanied by additional changes in meaning. The prefix *pre-*, for instance, alters the meaning of writing into that of copying, cf. *pisati*$_{\text{IPF}}$ (write) and *prepisati*$_{\text{PF}}$ (copy). While there is a strong correlation between perfectivity and telicity in Slavic it has been argued that the so-called delimitative prefix *po-* produces atelic eventualities, see the references in Dickey & Hutcheson (2003). This prefix typically signals short duration, as with *pospati*$_{\text{PF}}$ (sleep for a short while). For more related information on Slovenian see Dickey (2000, 2003), Orešnik (1994), and Toporišič (2000).

Chapter 3

Slovenian Performative Utterances

In this section I study Slovenian performatives without addressing performativity itself. I consider the lexical aspect of performative verbs in §3.1 and show that, unlike what is often assumed in the literature for English, Slovenian performative verbs (with their arguments) do not belong to a single category. I turn to their grammatical aspect in §3.2. While it is known that some perfective verbs do not seem to appear in performative utterances (only their imperfective versions do), other perfective (performative) verbs, such as *obljubiti*$_{\text{PF}}$ (promise), are intuitively fairly common. I illustrate this situation in more detail by considering a small corpus sample. I conclude the section by addressing the observation that perfective performative utterances sound less 'formal' compared to their imperfective versions.

3.1 Activities, Accomplishments, Achievements

In the literature one can find the assumption that performative verbs belong to the same lexical category: accomplishments, in Condoravdi & Lauer (2011), or achievements, in García-Carpintero (2013) and Krifka (2014).[1] I will show for Slovenian that there are telic as well as atelic performative verbs. I will not attempt to determine whether the telic ones are accomplishments or achievements but will provide evidence for their ambiguous behaviour with *in*-adverbials, which might explain why they were sometimes classified as one or the other in the literature.

[1] All three texts consider English performative verbs only.

Consider first the **atelic** *prositi*$_{\text{IPF}}$ (ask/request/beg). Like certain activity predicates it combines with the delimitative prefix *po-* (mentioned briefly at the end of the previous section) which yields *poprositi*$_{\text{PF}}$ (ask/request/beg for a little while). It also seems to pattern like activities with respect to the imperfective paradox:[2]

(3) a. *Izgubil sem se. Nekega gospoda sem prosil za smer,*
lost AUX REFL some gentleman AUX ask$_{\text{PTC.IPF}}$ for direction
ko je odjeknila eksplozija.
when AUX resound$_{\text{PTC.PF}}$ explosion
'I got lost. I was asking a man for directions when something exploded.'

b. Entailment: *Poprosil*$_{\text{PF}}$ *sem ga za smer.* (I asked him for directions.)

Like with other atelic eventualities, the imperfective sentence in (3a) entails the perfective sentence in (3b). Since *prositi*$_{\text{IPF}}$ also passes the standard tests for non-stativity (e.g. it appears in imperatives and is compatible with *deliberately* and *to force*), we can conclude that it is an activity predicate, or more precisely, that *prositi*$_{\text{IPF}}$ *za smer* (ask for direction) is an activity.

I now turn to **telic** performative verbs, with which this type of entailment does not go through (I omit the tests here). While it is difficult to find a clear-cut way of distinguishing between accomplishments and achievements in Slovenian, we can use *in*-adverbials, such as *in an hour*, to obtain distinct readings. Accomplishments typically span through the whole interval set by the adverbial, while achievements are inferred to obtain at the end of it, see e.g. Rothstein (2004) for details. To illustrate, *John built a house in an hour* (accomplishment) suggests that actual house building took place over the whole hour, while *John arrived in an hour* or *John broke his toy in an hour* (achievements) suggest that it was at the end of the hour that John actually arrived or broke the toy.

We often seem to be able to obtain both readings with performative verbs. To illustrate, consider first the following two examples, which, though not minimal, serve to emphasise this distinction.

(4) a. *Novega vladarja so razglasili v eni uri.*
new leader AUX declare$_{\text{PTC.PF}}$ in one hour

[2] Dowty's (1977) imperfective 'paradox' characterises the fact that sentences with a similar surface form can have distinct entailment patterns. Dowty compares activities, with which the entailment goes through, with accomplishments, with which it does not. (More generally, the line can be drawn between atelic and telic events.) Thus, *John was pushing a cart* entails *John pushed a cart* whereas *John was drawing a circle* does not entail *John drew a circle* (Dowty, 1977: 45).

'They declared the new leader in one hour.'

b. *Novega vladarja je predstavnik razglasil v 26 sekundah.*
new leader AUX spokesman declare$_{\text{PTC.PF}}$ in 26 seconds
'The spokesman declared the new leader in 26 seconds.'

Intuitively, (4a) suggests that the declaration occurred at the end of the hour and that there was no declaring before that (people might have retired to think). Similarly, a tortured criminal might admit (*priznati*$_{\text{PF}}$) that he is guilty in an hour, i.e. after an hour of silence. One might be tempted to conclude from this that performative verbs such as *razglasiti*$_{\text{PF}}$ are achievements. However, examples such as (4b) seem to speak to the contrary. The adverbial is inferred to measure speaking time and declaring is inferred to last for 26 seconds (as with accomplishments). One might argue that declaring is something that proceeds incrementally, word by word, and that while the leader himself may be declared at the very end, there is declaring occurring before that. The latter is perhaps clearer if the complement is more complex, as in the following example:

(5) *V 2 minutah ji je Janez sporočil, da se ločuje,*
in two minutes her AUX John let-know$_{\text{PTC.PF}}$ that REFL is-divorcing
ker ima vsega dovolj.
because has all enough
'In two minutes John informed her that he was getting a divorce because he had had enough.'

While a reading analogous to (4a) is possible, consider the reading analogous to (4b). If John is interrupted half way, he might have informed his wife that he was getting a divorce but perhaps he has not informed her (yet) about the reasons for it. This suggests that performative verbs like *sporočiti*$_{\text{PF}}$ or *razglasiti*$_{\text{PF}}$ can behave like accomplishments.

It is not essential for the purposes of the subsequent sections to force telic performative verbs into one or the other class. The purpose of this discussion was merely to show that there are reasons for one as well as for the other view, at least in Slovenian. More research is needed to fully understand the lexical aspect of performative verbs and their interaction with *in*-adverbials.[3]

[3] I will not be concerned with English data much, but the native speakers I consulted think that – unlike with *prositi*$_{\text{IPF}}$ – the entailment does not go through in (3b) for *ask*. Similarly for *promise*: *Mary was promising John to execute his will when the bomb exploded* does not entail *Mary promised John to execute his will* (Condoravdi & Lauer, 2013: 20). Examples (4) and (5), on the other hand, seem to be analogous to Slovenian in their ambiguous readings.

3.2 Grammatical Aspect: Perfective and Imperfective Performatives

As shown in the introduction, Slovenian comes with perfective and imperfective performative utterances. What is the difference? Are both forms always available? These are the two core questions that I address in this section, in reverse order.

3.2.1 Perfective Performatives

Slovenian performative utterances always seem to allow for imperfective verbal forms, provided that they exist with the relevant meaning (which is not a given in Slavic). In addition to secondary imperfectives, one can also find simplex (cf. §2) ones, such as *trditi*$_{\text{IPF}}$ (claim). Slovenian performative utterances do not, however, always (or in all dialects) appear with the perfective form, as already observed by Žagar (2011) for *ukazati*$_{\text{PF}}$ (order). These forms often seem to have a future reading, as in (6a), even though there exists a periphrastic future form, cf. (6b).[4]

(6) a. *Ti* *sporočim.*
to-you let-know$_{\text{1SG.PRE.PF}}$
'I'll let you know.'

b. *Ti* *bom sporočil.*
to-you AUX let-know$_{\text{PTC.PF}}$
'I'll let you know.'

Žagar (2011) suggests that Slovenian could be in the process of replacing perfective performatives with the imperfective ones, and that such a transition has already occurred with the pair *ukazati*$_{\text{PF}}$/*ukazovati*$_{\text{IPF}}$ (order). Furthermore, he claims that '[i]n the case of promising or swearing in, for example, in everyday conversation the perfective form is used as well, but it is more of an exception' (Žagar & Grgič, 2011: 34), also in Žagar (2011). In this section I wish to provide evidence against the latter claim and show that the situation is not so straightforward.

[4] A present perfective form does not generally have a future reading. A sentence such as *Janez zgradi hišo* (John build$_{\text{3SG.PRE.PF}}$ house) does not simply mean 'John will build a house'. It is unfortunately beyond the scope of this paper to study when (and with what present perfective form) a future reading arises. This also means that we will not be able to account for the distinctions in perfective performative utterances; I return to this point at the end of this section.

Let us therefore consider a few pairs of perfective and imperfective forms and see whether their distribution in performative uses (given a random sample of 50) is roughly the same. We can rely on the pre-theoretic notion of performativity that an utterance is performative when the main verb names the action that takes place in virtue of the sentence being uttered. It is important to stress that the **purpose** of this short investigation is merely to illustrate what the situation is like and argue against any radical views on the matter.[5]

Type	Tokens	Meaning	✓[50]	✗[50]	?[50]
sporočam$_{\text{IPF}}$	134	let know	39	9	2
sporočim$_{\text{PF}}$	100	let know	0	50	0
obveščam$_{\text{IPF}}$	158	inform	47	2	1
obvestim$_{\text{PF}}$	50	inform	1	49	0
priznavam$_{\text{IPF}}$	75	admit	9	35	6
priznam$_{\text{PF}}$	1484	admit	41	8	1
prisegam$_{\text{IPF}}$	293	swear	34	14	2
prisežem$_{\text{PF}}$	330	swear	46	3	1
obljubljam$_{\text{IPF}}$	168	promise	42	6	2
obljubim$_{\text{PF}}$	589	promise	37	11	2
zahvaljujem$_{\text{IPF}}$ *se*	672	thank	45	2	3
zahvalim$_{\text{PF}}$ *se*	159	thank	3	45	2
opravičujem$_{\text{IPF}}$ *se*	720	apologize	48	1	1
opravičim$_{\text{PF}}$ *se*	47*	apologize	0*	45*	2*
razglašam$_{\text{IPF}}$	19*	declare	13*	2*	4*
razglasim$_{\text{PF}}$	10*	declare	0*	10*	0*

Figure 3.1: Some performative verbs in corpus Kres

The table contains a sample of Slovenian performative verbs from corpus Kres[6]. I tried to select verbs with a high number of tokens as well as include examples from each of the five categories by Searle (mentioned in §4). Note also that all imperfectives in the table are secondary (cf. §2).

The **type** column contains verbal forms; they are subscripted for grammatical aspect and they appear in first person singular present tense. For example, *sporočati*$_{\text{IPF}}$ (to let somebody know something) appears in the form *sporočam*$_{\text{PF}}$

[5]Another possible assumption would be that Slovenian always allows for perfective and imperfective performatives. This is certainly true of some verbs, but not all.

[6]Corpus Kres is a balanced corpus of contemporary Slovenian with 100 million words from texts ranging from years 1990–2011 (source: http://www.korpus-kres.net/Support/About).

(I am letting you know). The **token** column contains the number of occurrences of a form in corpus Kres, and the star signals that there were fewer than 50. The third column provides a rough translation of the relevant infinitive. The last three columns provide the results of **annotation** given a random sample (when possible) of 50 tokens. Given this sampling, column ✓ contains the number of cases where the utterance was performative (more precisely, it was an explicit performative utterance), ✗ contains the number of cases where it was not, and **?** serves to group together the cases where this was not possible to be determined (typically, due to the lack of available context). When a type had less than 50 tokens all tokens were analysed and the results were marked with an asterisk (to distinguish them from the cases where the resulting number was relative to 50). *Razglasim*$_{\text{PF}}$, for instance, has only 10 tokens of which 10 appear in non-performative utterances (in other words, the corpus contains no performative utterances with *razglasim*$_{\text{PF}}$). There are a few reflexive verbs in the table. The search for the clitic *se* was typically limited to up to 3 places away from the verb (0 places away being the minimum), except with *opravičim se* where I used the maximum (up to 10 places away) to get as close to 50 tokens as possible. Note that we are not interested in the total number of tokens in the corpus.

From this short investigation we can conclude that the eight **imperfective** verbal forms exist in performative utterances. Even though such cases are fewer with *priznavati*$_{\text{IPF}}$ (admit), 9 out of 50, this is due to the fact that the verb has an extra meaning. It is often used to signal that one is (generally) acknowledging or accepting a certain view or concept (in the sense of belief).[7]

The **perfective** verbal forms, on the other hand, display two distinct behaviours. With *priznam*$_{\text{PF}}$ (I admit), *prisežem*$_{\text{PF}}$ (I swear) and *obljubim*$_{\text{PF}}$ (I promise), there are relatively many instances of performative uses. Given the 1,484 tokens of *priznam*$_{\text{PF}}$, there are 41 performative cases in the random sample of 50. This is fair evidence to support the intuition that some perfectives are still very much alive, and are not 'exceptions' as Žagar suggests. The remaining five perfectives, on the other hand, appear to be rarely used performatively.[8] We can take this as suggestive evidence against the view that Slovenian performatives freely allow for both aspectual options. It is also consistent with Žagar's opinion that *some* perfective verbs have become rather obsolete in (explicit) performative utterances.

[7] Similar noise interfered with *prisegati*$_{\text{IPF}}$ (swear).

[8] They do, however, often appear in the so-called 'implicit' Austin (1962) performative utterances – in the scope of an item. For example, they often appear in the scope of *lahko* (can) and *naj* (let), as in *Let me inform you that John has arrived*. Approximately half of the tokens were such with *zahvalim*$_{\text{PF}}$ *se* and *sporočim*$_{\text{PF}}$. Recall, though, that such cases are not the object of our study.

I have used this small study to argue why no radical view is tenable when it comes to the status of modern Slovenian perfective performative verbs. The evidence suggests that in performative utterances some perfectives are very much alive, alongside their imperfective counterparts, while others have become relatively rare.

It is imperative to understand why this is so since it might shed important light onto how performatives work (or in this case, do not work). One might consider the possibility that certain (present) perfective forms do not appear in performative utterances because, like in Russian for example, they have future readings. While it often appears as if the future reading was blocking performativity, it is not so clear whether this could explain the overall situation. It seems that even (present) perfective verbs like *obljubim*$_{\text{PF}}$, which do appear in performative utterances, are not incompatible with futurity. I leave it for future work to understand the exact relationship between performativity and the temporal reference of present perfectives.

3.2.2 Imperfective Performatives Are Formal?

In Žagar's work, we find the claim that only imperfective performatives are used in 'institutional settings (e.g. swearing in of the judges, swearing in at the National Assembly, etc.) or settings strongly marked with social hierarchy (speaking in public, in front of a large audience)' (Žagar & Grgič, 2011: 34), also Žagar (2011). While the claim has some intuitive basis, as the imperfective form does sound more formal and serious compared to the perfective one, I disagree with the second part of his statement. The following example is taken from a pre-prepared script for president's speech on National Day:

(7) *Obljubim vam, da bom kot predsednik republike v okviru svojih pristojnosti pri teh naporih sodeloval po svojih najboljših močeh.*[9]
I promise$_{\text{PF}}$ you that, within the scope of my authority, I will, as President of the Republic, take part in these efforts to the best of my abilities.

If Žagar's claim were true we would have expected the script to contain the imperfective since the president is to speak in public and in front of a large audience. It also questionable whether we can deny that the setting is strongly marked with social hierarchy since the president's role as president is explicitly evoked. One could argue that the author's attempt is to make the president sound more "friendly", but this is irrelevant for the claim (i.e. it does not play a role in it). We can slightly modify the generalisation as follows:

[9]Source: http://www.delo.si/assets/media/other/20140624/govor_dan_drzavnosti.pdf (accessed November 2014)

(8) GENERALISATION (to be amended). In (explicit) performative utterances, the Slovenian imperfective is used in fixed settings (e.g. swearing in by a judge) and serves as the default in formal settings.

It is unfortunately outside the scope of this paper to precisely define what situations count as formal settings for the imperfective, but we can assume that it is something along the lines of Žagar's claim. I must also take for granted the effect that is produced when the default is violated. In example (7), it is perhaps a certain air of social proximity.[10]

The generalisation above implies that the imperfective is not the default in daily situations. This cannot, however, be the case with those performative verbs whose perfective forms rarely or never appear in performative utterances, cf. §3.2.1. That is, the imperfective must vacuously be the default if it is the only option available. The generalisation should be modified accordingly:

(9) GENERALISATION. In (explicit) performative utterances, the Slovenian imperfective is used in fixed settings (e.g. swearing in by a judge) and serves as the default in formal settings. The perfective, when available performatively, is the default elsewhere.

Violating the default perfective (by using the imperfective) seems to come at the cost of enhancing the strength or seriousness of the act.[11] In the remaining part of this section, I wish to provide further evidence for the view that the formal effect is not some inherent property of the imperfective verb or some other component of the construction.

First, there are imperfective performatives that lack the formal effect altogether; they are commonly used in daily situations. One example is *čestitati*$_{\text{IPF}}$ (congratulate), which has no corresponding perfective form with the same meaning.[12] Second, the imperfectives that produce the effect of formality when contrasted with their perfective counterparts in performative utterances, loose this effect in non-performative utterances. That is, when they are employed for their aspectual properties.

[10] Note that this is crucially different from saying that the setting itself is not marked with social hierarchy.

[11] This effect of the imperfective is also acknowledged by Žagar (2011): 'if the Slovenian speaker wants to emphasize the seriousness and unambiguousness of his promise (regarding the promised acts) he will prefer to use the imperfective form (as with "formal" occasions)' (Žagar & Grgič, 2011: 152).

[12] This is a simplex imperfective, and while there might be some secondary imperfectives like it, it is generally difficult to check for formality. This is because performative verbs often sound formal for independent reasons – due to competition with other ways of conveying the same information. In particular, expressions such as *thank you* are very frequent (as opposed to *I thank you*). Note that *čestitke* (congratulations) does not seem to interfere in Slovenian in this case.

(10) John mumbles something to Mary.
M: *Kaj praviš?*
what say$_{2SG.PRE.IPF}$
'What are you saying?'
J: *Obljubljam ti novo kolo.*
promise$_{1SG.PRE.IPF}$ you new bike
'I'm promising you a new bike.'

The sentence serves to redescribe some previous act and is arguably not itself a performative utterance, as has been suggested for similar examples with the English progressive (Condoravdi & Lauer, 2013: 20). Since it shows that there is nothing inherently formal about *Obljubljam ti novo kolo*, it strongly suggests that the formal connotation of the imperfective arises due to the division of labour in performative utterances.[13]

One might find further evidence to support the idea that the formal connotation can appear only in performative utterances. Intuition suggests that a verb like *obljubljati*$_{IPF}$ has this connotation only when it describes its own utterance. This is in line with the view that performatives are self-referential. When describing a different act in progress, for example, the imperfective utterance does not sound particularly formal.

(11) A double channel communication scenario (Maribel Romero, p.c.):
Suppose you are writing an email to A saying *I promise to marry you* and talking on the phone to A, who asks you *What are you doing (now)?* If you say *I promise to marry you*, you cannot be describing the act on the computer. You just bring about the promise with that utterance.
(Condoravdi & Lauer, 2013: 16)

Unlike the English and the Slovenian perfective, the Slovenian imperfective can be felicitously used to describe the on-going promise in the email. It seems to be used (like the English progressive would be) for its aspectual properties – to describe an event in progress, which is what one cannot do with the perfective. Interestingly, however, the imperfective does not seem to be able to describe its own utterance as an on-going promise. Suppose somebody enters the room in the situation above and they do not know about the email or the addressee's question. The imperfective utterance over the phone would be understood as

[13] Since there seems to be some dialectal variation in the distribution of aspectual forms in performative utterances Žagar (2011), it is important to consider whether similar distinctions appear with other verbal pairs, such as *priznati*/*priznavati* (admit), and it seems that they do.

describing itself as a complete – rather than a partial – promise, just as with the perfective. This is something one should seek to explain.

Chapter 4

Performativity and Self-Verification

In this chapter I want to properly introduce the notion of performativity. I will not attempt to do justice to the large body of literature on performativity, but will instead focus predominantly on the recent proposal by Condoravdi & Lauer (2011, 2013). Their proposal shifts the burden of showing the performative effect to the domain of public commitments and mentions explicit predictions regarding English progressive performatives.

I briefly introduce the performative effect in §4.1 and proceed to a discussion of Condoravdi & Lauer's proposal (§4.2). In the rest of the chapter I focus on imperfective performativity. Building on previous work Močnik (2014a), I first explain what I understand to be the crucial difference between the Slovenian imperfective and the English progressive, responsible for allowing and blocking performativity, respectively. I show how this distinction is reflected in the system of C&L and explain why the system does not account for Slovenian imperfective performativity (§4.3.1). In §4.3.2 I explain why an independent mechanism for self-reference can remedy this problem and set the stage for chapter 5, where I put forward a concrete proposal of how self-reference could be formally derived.

4.1 The Performative Effect

Performative utterances come with a certain amount of variety. A well-known example of classification is Searle's (1975; 1976) division of performatives into five groups:

— **Representatives** (Assertives), such as *I claim that John is guilty*, commit

the speaker (to some degree) to the truth of the underlying proposition (e.g. that John is guilty)

— **Commissives**, such as *I promise to come*, commit the speaker to some future course of action (in this case coming)

— **Directives**, such as *I order you to leave*, are the speaker's attempts to influence the hearer's actions (such as leaving)

— **Expressives**, such as *I thank you for your kindness*, express some psychological state (e.g. being thankful) towards a state of affairs (e.g. the addressee's kindness)

— **Declarations**, such as *I declare war*, bring about 'a state of affairs specified in the propositional content by saying in effect, I declare the state of affairs to exist' (Searle, 1976: 21)

What such utterances have in common for Searle is that they are (explicitly) performative in the following sense: 'some illocutionary acts can be performed by uttering a sentence [whose main verb] names the type of speech act' (Searle, 1989: 536–537).[1] We can, for instance, perform an order by uttering a sentence with *order* as the main verb.

Despite the variety, there is something that the performative verbs mentioned above share that verbs such as *annoy*, *insult* or *bore* do not (Eckardt, 2012; Lauer, 2013). Namely, the former can guarantee the desired effect when the latter may fail to do so. Consider for example the following sentence with *hereby*: *I hereby insult you*. The utterance of this sentence is not in itself an insult (it is not necessarily an insult) because it is contingent on the effect it makes on the addressee. One can check whether the addressee is actually insulted or not and thereby judge whether the proposition expressed is true. This kind of truth-checking does not seem to work with performative utterances, where it is odd for the hearer to object or express agreement. Eckardt calls this the *yes-no* test:

(12) *I invite you to come to my party tonight. –#No, that's not true.*
I invite you to come to my party tonight. –#Yes, correct.
(Eckardt, 2012: 28)

[1] The original quote ('some illocutionary acts can be performed by uttering a sentence containing an expression that names the type of speech act') was paired together with the fact that a performative verb is defined as 'a verb that can occur as the main verb in performative sentences' (Searle, 1989: 536).

An important task for a theory of performativity is to explain why this is the case. The task is especially challenging for **assertoric accounts**, which – unlike Austin (1962) or Searle (1989) – take performative utterances to be assertions and performative sentences to be plain sentences in the declarative mood.[2] The main argument behind this approach is that a sentence like *I promise to come to the party* surely looks like an ordinary declarative sentence. The account by Condoravdi & Lauer (2011, 2013) that I present in the following section is an assertoric account. I therefore return to the issue of the *yes-no* test after presenting the relevant aspects of their account.

4.2 Condoravdi and Lauer (2013)

Condoravdi & Lauer (2011, 2013) (to some extent also Lauer (2013)) propose an account of performativity in terms of **speaker commitments**, which they pack in the semantics of the performative verb. This allows them to distinguish performative verbs from verbs like *bore*, which are assumed to encode other conditions, such as the speaker's effect on the addressee. I will illustrate the features of their account on *promise*.

Promising is characterised in terms of agent preferences. Formally, C&L use **preference structures**, which are rankings (weak partial orders) of propositions according to what is more important to the agent. For promising, it is what the agent prefers (preference structures can also encode desires or obligations, for example). The agent integrates his preference structures in the so-called **effective preference structure**, i.e. a consistent ranking of propositions that guides his action.

C&L propose to move away from such a private notion of preference. Commitments are seen as commitments to act – if an agent is committed to φ, he will act in accordance with φ.[3] This is the intuitive way in which the distinction between an (actual) effective preference and a **public effective preference** is drawn. Similarly for belief and public belief. Public effective preferences and public beliefs are in turn used for modelling the semantics of performative verbs such as *claim*, *order*, and *promise*.

[2] For Searle, for example, a performative utterance is not an assertion, but the assertion (and truth) is derivable from it. If the speaker uttered that he ordered me to leave as well as actually ordered me to leave, then he made a true statement (Searle, 1989: 553).

[3] C&L's understand taking on a commitment as a constraint on models that excludes certain possible futures: those in which not keeping an active commitment does *not* result in a violation. By active, I mean to express C&L's notion of the commitment not having been voided, i.e. rescinded or found impossible to fulfil.

Abstracting away from time, we define the agent's public effective preference for p as the set of worlds in which p is a maximal element of his public effective preference structure. Again, the agent has a commitment to act as though p was a maximal element in the ranking, but it need not actually be.

(13) $$PEP(a,p) := \left\{ w \in W \;\middle|\; \begin{array}{c} p \text{ is a maximal element of } a\text{'s public} \\ \text{effective preference structure in } w \end{array} \right\}$$

(C&L, 2013: 10)

Similarly, the agent's public belief (PB) in p is defined as the set of worlds in which he is committed to act as though he believed p.[4] As I will repeat below, an utterance of a declarative sentence is taken to induce the speaker's public belief in its content. Therefore a formal implementation of performativity would require models to validate the following principle (desideratum) for promising:

(14) $PB(a, PEP(a,p)) \Rightarrow PEP(a,p)$ (C&L, 2013: 11)

Literally, (14) states that if agent a publicly believes that he has a public effective preference for p, then he has a public effective preference for p. We can paraphrase this as: if a is committed to act as if he believed that he was committed to act as if he effectively preferred p, then he is committed to act as if he effectively preferred p.

The **performative effect** is derived with the help of the idea that the content of an assertion gets added to the speaker's public beliefs (I return to more details in §4.3.1). In a simplified representation, the content of a's promise that p is $PEP(a,p)$. Given the reduction in (14), the content of this assertion, i.e. $PEP(a,p)$, obtains. Essentially, we have just moved from ASSERT(PROMISE(p)) to PROMISE(p), without using illocutionary operators such as ASSERT but using conventions about declaratives. Given this 'public' conceptualisation of performatives, the relevant question for C&L is no longer whether the speaker actually intended to promise (as argued by Searle; posed as a fundamental problem for assertoric accounts), but whether the speaker is really committed to what he asserts he is committed to.[5]

We can now briefly return to the **yes-no test** (Eckardt, 2012) mentioned with example (12). There is an interesting proposal in the literature by Kaufmann (f.

[4] C&L write $PB(a,p) := \{w \in W \mid a \text{ is committed to the belief that } p \text{ in } w\}$ (C&L, 2013: 10). This seems to be a typo – 'belief' should be 'public belief' (just as we speak of 'public effective preference structure' above).

[5] I will note here that C&L never mention the type of examples discussed by Eckardt (2012: 32): *The king promises to give you a cow* said by the messenger. As far as I can see, they are unable to account for them because the reduction principle cannot apply since the speaker and the 'promiser' are not one and the same agent.

Schwager), who analyses imperative utterances and links such an effect with the following authority presupposition: 'Speaker is presupposed to be an authority on facts that determine the truth of the imperative' (cited in Eckardt (2012: 51)). She observes that this effect can also appear with plain declaratives such as *I am hungry* (*#That's not true*) (Kaufmann, 2012: 166). Eckardt (2012: 52) explains how this might relate to performatives: the speaker has privileged access to his desires and preferences, which form a proposition that the hearer, who lacks such access, cannot agree or object to.

While this explanation is intuitively appealing, I find it hard to see how it could be reconciled with C&L's conception of performativity since there is nothing private about it – the key idea is that it is the 'public' facet of things that matters. Instead, one could argue that the effects observed with the *yes-no* test have to do with the behaviour of a performative utterance with respect to the common ground.

C&L agree with Jary (2007) that the fact that an assertion has happened is immediately part of the common ground. Therefore its content is by convention added to the speaker's public beliefs.[6] The proposition expressed by the performative utterance is therefore automatically in the common ground due to a reduction principle like in (14).[7]

One could argue that *That's false* is odd because denying the content of a performative assertion essentially denies that the assertion has just taken place (we can disregard the cases where it is acceptable because it targets the underlying proposition or the presuppositional content). This is contradictory to the fact that the addressee has just witnessed the assertion being made. On the other hand, if the addressee responds with *That's true*, the oddity could be ascribed to the fact that he is agreeing with a proposition that is automatically accepted to the common ground. In this case a similar argument would be made for tautologies.[8,9]

[6]Notice the distinction between adding the content to the speaker's public beliefs and adding the content to the common ground (C&L assume that the latter happens only after the speaker has accepted the assertion, and it is thus not an automatic process).

[7]Recall that for example $PB(a, PEP(a, p))$ being in the common ground (by declarative convention) means that $PEP(a, p)$ is there as well due to the reduction principle in (14).

[8]If the speaker utters *It is raining or it is not raining*, it does not seem to me that the response *That's true*, if you take it to be acceptable, targets the tautological content of the proposition. Rather, it seems to express something like *That's a fair point*, which targets the speaker's implicature that there is no third option.

[9]In the subsequent sections I propose a different take on C&L's proposal to account for Slovenian imperfective performatives. Since chapter 5 is meant to be an independent account of self-referentiality, i.e. not dependent on C&L's analysis, I point out here how it relates to their conception of performativity in terms of automaticity. See chapter 5 for the notions that follow.

The proposition is automatically (in the sense that C&L's reduction can apply) in the common

4.3 Imperfective Performativity

Imperfectivity is a notion that covers aspectual operators such as the Slovenian imperfective and the English progressive.[10] In Močnik (2014a) I discuss the semantics of the Slovenian imperfective in relation to English and Russian, and propose a suitable lexical entry for it. The account is based on Altshuler's (2013) analysis of English and Russian, which is in turn a proposal in the spirit of Landman's (1992) intensional, event-based account of the English progressive. These analyses involve a fair amount of technical detail that is not needed here; I will simplify and formalise only what is needed for the discussion of imperfective performativity further below.

The idea behind Landman's account is that the set of events is ordered by a stagehood relation. Essentially, a less developed version of an event is said to be a **stage** of that event (note that it is itself also an event). To illustrate, the event of building a house consists of several stages, one of which is building the foundations. The sentence *John was building a house* is true if there is an event in the actual world (more precisely, world of evaluation) such that it is a stage of a house building event, which need not occur in that world.

If possible worlds are not disregarded, I will relate two such events occurring in their worlds with $e'_{w'} \sqsubset e_w$ or $e'_{w'} \sqsubseteq e_w$, depending on whether the stagehood relation is proper or not. I will also index predicates of events with respect to worlds, e.g. $P(e, w)$. To illustrate the simplified representation of the progressive, consider again the declarative sentence *John was building a house* with ε as its utterance event. Using only events, times and worlds and letting w^* be the actual world, t topic time, τ the temporal trace function, and $<$ the temporal precedence relation, we can write the logical representation as:[11]

(15) $\exists e'[\tau(e') \subseteq t \wedge t < \tau(\varepsilon) \wedge \exists e \exists w[B(e, w) \wedge e'_{w^*} \sqsubset e_w]]$

ground once the sentence is interpreted as being self-referential (we will say more on this later in this chapter). The notion that 'the fact that an assertion occurred is immediately part of the common ground' roughly corresponds to the automatic formation of an utterance DRS, which introduces an event discourse referent for the actual utterance. Once the content of the utterance is merged with the utterance DRS, the resolution strategy of the event anaphora dictates that binding is preferable, which means that these anaphoric referents can be bound to the utterance event. In the vanilla scenario, i.e. when there are no other salient events, denying and agreeing is nonsensical because the utterance event is guaranteed to be the witness. That is, since there are no other accessible utterance events, it is guaranteed that anaphora will bind to the actual utterance event.

[10] The progressive aspect is often considered to be a subtype of the imperfective aspect, see Comrie (1976: 25).

[11] I return to the question of splitting the predicate and the stagehood requirement in footnote 33 in §5.4.3.1.

This in essence says that there is an event e' in the past of the utterance ε such that there is an event e and some world w such that it is a building of a house event in that world and e', which occurs in the actual world, is its proper stage.

Altshuler proposes that the English progressive requires the event in its denotation to be a strict ($\sqsubset$) stage of the complete event, as in (15), whereas the Russian imperfective requires it to be a non-strict ($\sqsubseteq$) one. While there are some important distinctions between Russian and Slovenian, I have argued in Močnik (2014a) that the Slovenian imperfective also encodes the non-strict relation.[12] I will take the distinction between the strict and the non-strict relation to play a **crucial role** in explaining imperfective performativity below.

4.3.1 Problem for Condoravdi and Lauer (2013)

Condoravdi & Lauer's account, presented earlier, is in fact more complex in that it involves reference to events and times. In order for a reduction like $PB(a, PEP(a, p)) \Rightarrow PEP(a, p)$ to take place, the time of the two kinds of commitments needs to coincide. In this section we will see that C&L make a non-standard implicit assumption about the perfective present, which enables them to derive perfective performatives. I will also explain what prevents progressive performativity in their account, and why this prevents us from ensuring the performative effect with the Slovenian imperfective.

It has already been mentioned that promising involves reference to the speaker's public effective preference structure (PEP). We now introduce events and times in order to be able to capture the idea that an event can bring about certain commitments and, more specifically, that such commitments arise at the very end of that event. C&L impose two requirements for what it means for an event e to be a promise. Let a and b be agents, p the promised proposition and w the world of evaluation:

(16) $promise(e, a, b, p)$ holds in w iff
  a. $CE_{a \to b}(e)$ (e in w is a communicative event from a to b)
  b. $p \in PEP_a[e]$ (in the context of e, e in w commits a to $PEP(a, p)$)

(adapted from C&L, 2013: 14)

[12] Briefly, Slovenian and Russian pattern differently with respect to imperfective achievements. In Russian, secondary imperfective achievements entail the culmination of the event (Altshuler, 2013), while the Slovenian ones do not. Note, however, that both languages use the imperfective to imply the culmination of an accomplishment and that Russian also has imperfective performatives, see Dickey (2000). See Bary (2012) for imperfective performatives in Ancient Greek.

The first condition requires e to be an event of communication, for example an utterance event. The second condition introduces some important notation. The set $PEP_a[e]$ should be understood as the set of preferential commitments of a that *result* from event e. This is how $PEP(a,p)$, defined in (13), and $p \in PEP_a[e]$ are indirectly related. I will now point to where the problems in their derivation arise.

(17) Let ε be the utterance of *I promise to get the tickets* by speaker a to addressee b, and let p abbreviate the proposition that a will get the tickets.

a. Logical representation: $\exists e(\tau(e) = \tau(\varepsilon) \wedge CE_{a\rightarrow b}(e) \wedge p \in PEP_a[e])$

b. Let φ (a proposition) be the set of worlds in which (a) is true.

c. By convention[13]: $\varphi \in PB_a[\varepsilon]$

There are three key things to observe in order to see that the performative effect follows from the logical properties assumed in (17a). First, (i) the temporal intervals of the utterance event ε and the 'promise' event e coincide, as stated by $\tau(e) = \tau(\varepsilon)$. Second, (ii) condition $p \in PEP_a[e]$ tells us that e brings about $PEP(a,p)$. This is in fact taken to mean that $PEP(a,p)$ obtains at the last instance of e. Similarly, (iii) condition $\varphi \in PB_a[\varepsilon]$ tells us that the utterance event ε brings about $PB(a,\varphi)$, thus $PB(a,\varphi)$ obtains at the end of ε. Since the two events coincide temporally, by (i), their last instances coincide, which means that $PEP(a,p)$ and $PB(a,\varphi)$ obtain at the same time. If we sloppily replace proposition φ in $PB(a,\varphi)$ with $PEP(a,p)$ (see C&L (2011; 2013) for details), we can get an idea of why a principle like $PB(a,PEP(a,p)) \Rightarrow PEP(a,p)$ gives us that $PEP(a,p)$ actually obtains, i.e. that a promise has actually been made.

One of the highlights of C&L's analysis is that given the logical representation in (17a) one can automatically derive that a promise has been made in a given world. This fact is used for deriving (see Appendix) that the utterance is a witness for its own truth. This is what C&L understand to be the 'necessarily self-verifying' (C&L, 2011: 12) aspect of performative utterances. Thus, unlike many other accounts, their analysis 'derives the self-verification of explicit performative utterances without assuming that they are self-referential' (C&L, 2011: 13). I will now present **two arguments** against this, and in favour of the view that we need to either assume or independently derive self-referentiality (§5) in order to guarantee the performative effect.

The **first** issue I take with Condoravdi & Lauer (2011, 2013) (in the paper as well as in the more recent handout) is that they take $\tau(e) = \tau(\varepsilon)$ for granted.

[13]Recall the convention mentioned earlier that the content of an assertion gets added to the speaker's public beliefs (here φ is added to a's public beliefs that result from ε).

While not unreasonable, the claim is problematic without any argumentation. Typically the relationship between the two is characterised in terms of the inclusion relation. More precisely, using the notion of topic time t due to Klein (1994), the perfective aspect is typically taken to require that the event's time span is *included* within topic time and the present tense is taken to equate the topic time with speech time, see Altshuler (2012). Thus one would expect (17a) to be:

(17a′) $\exists e[\tau(e) \subseteq t \wedge t = \tau(\varepsilon) \wedge CE_{a\rightarrow b}(e) \wedge p \in PEP_a[e]]$

In other words, one would expect $\tau(e) \subseteq \tau(\varepsilon)$. If we adopt the latter condition, we can no longer guarantee (without further assumptions) that the last instance of $PEP(a,p)$, induced by e, and the last instance of $PB(a,\varphi)$, induced by ε, coincide. Performative utterances are only contingently self-verifying in this case. It is not clear whether C&L make any other assumptions that could remedy this if we adopted the weaker requirement.[14]

The **second** issue is related to the previous one in that it speaks about the opposite relationship: $\tau(\varepsilon) \subseteq \tau(e)$, where e is the (completed) promise event. We obtain this by assuming the aforementioned semantics of the Slovenian imperfective aspect, which encodes the non-strict stage relation. To create an independent argument, we can for now take it for granted that the described event, here e', coincides with the utterance, i.e. $\tau(e') = \tau(\varepsilon)$. The Slovenian imperfective analogue of (17a) states that there is an event which temporally coincides with the utterance such that, roughly, it is a possibly incomplete promise event:

(18) $\exists e'[\tau(e') = \tau(\varepsilon) \wedge \exists e \exists w(e'_{w^*} \sqsubseteq e_w \wedge CE_{a\rightarrow b}(e) \wedge p \in PEP_a[e])]$

C&L's analysis faces a similar problem as before: self-verification cannot be derived automatically. The main reason here is that e' is a non-proper stage of e, from which we can reasonably assume that $\tau(e') \subseteq \tau(e)$. Given that the utterance event ε and e' coincide, we have that $\tau(\varepsilon) \subseteq \tau(e)$. It is crucial to observe that the main point is *not* that the semantics of the Slovenian imperfective is incompatible with deriving the performative effect (it is perfectly compatible if we somehow

[14] In particular, since they speak of the possibility of commitment voiding, it is not clear whether they would wish to assume, somewhat unrealistically, that commitments are monotonically increasing (I can take on new commitments but I can never be relieved of them). The latter would give us that the commitments induced at the end of e *still* hold at the end of ε. If not, it is possible to argue pragmatically that the temporal span between the end of e and the end of ε is typically 'too small' for a commitment to be voided. I do not see how the latter makes performatives any less contingently self-verifying on the logical level.

force e' to coincide with e), it is that it does not follow by logic that the relevant commitments have arisen at the end of ε.

I take the crucial difference between the English progressive and the Slovenian imperfective to be that the English progressive encodes the strict relation, as in (19).[15] By analogous reasoning, this means that $\tau(\varepsilon) \subset \tau(e)$, which is why the commitments induced by *e cannot* arise at the end of the utterance. This is a welcome conclusion since it corresponds to the intuition that we cannot normally promise with an utterance of *I'm promising to get the tickets*.

(19) $\exists e'[\tau(e') = \tau(\varepsilon) \wedge \exists e \exists w(e'_{w^*} \sqsubset e_w \wedge CE_{a\to b}(e) \wedge p \in PEP_a[e])]$

I hope to have shown that it is unreasonable to formulate a theory in which performativity necessarily follows from the logical properties of the performative sentence. Nevertheless, C&L's proposal offers important insights into commitments, their public nature, and into how an assertoric account might make use of them. I therefore want to explain in the following section why it is not incompatible with the issues raised in this section.

4.3.2 Eckardt's (2012) Proposal and Discussion

Recall C&L's example, repeated as (20). Roughly, one of the goals was to show that the speaker's public belief and public effective preference obtain at the same time, so that we can reduce the two as in (14′). To show how one could make this work given the semantics of the Slovenian imperfective, we can rewrite (20a) as (21), using the standard treatment of topic time t in addition to the semantics of the imperfective.

(20) Let ε be the utterance of *I promise to get the tickets* by speaker a to addressee b, and let p abbreviate the proposition that a will get the tickets.

a. $\exists e(\tau(e) = \tau(\varepsilon) \wedge CE_{a\to b}(e) \wedge p \in PEP_a[e])$

b. Let φ be the set of worlds in which (a) is true.

c. $\varphi \in PB_a[\varepsilon]$ (by convention)

(14′) $PB(a, PEP(a, p)) \Rightarrow PEP(a, p)$ (C&L, 2013: 11)

(21) $\exists e'[\tau(e') \subseteq t \wedge t = \tau(\varepsilon) \wedge \exists e \exists w[e'_{w^*} \sqsubseteq e_w \wedge CE_{a\to b}(e) \wedge p \in PEP_a[e]]]$

[15] If there is a language where the imperfective operator encodes the non-strict relation without allowing for imperfective performatives, there might be other factors that can block performativity. This is not, however, the case in Slavic where imperfective perfomatives are common (Dickey, 2000).

To answer the question of how C&L can be made compatible with the Slovenian imperfective, let us assume there is a mechanism that would tell us the following: $\varepsilon = e' = e$. We can then rewrite the logical structure in (21) as (22a) and, removing the redundant conditions and using the fact that ε is indexed to w^*, we can rewrite (22a) as (22b).

(22) a. $\tau(\varepsilon) \subseteq t \wedge t = \tau(\varepsilon) \wedge \exists w[\varepsilon_{w^*} \sqsubseteq \varepsilon_w \wedge CE_{a\to b}(\varepsilon) \wedge p \in PEP_a[\varepsilon]]$
b. $CE_{a\to b}(\varepsilon) \wedge p \in PEP_a[\varepsilon]$

I now want to show that, though somewhat **trivially**, C&L's derivation still applies to (22b). Let φ be the set of worlds in which (22b) is true. Again, we are given $\varphi \in PB_a[\varepsilon]$ by declarative convention, as in (20c) above. So we are interested in (i) the end time of ε, which brings about the speaker's public belief in φ, and (ii) the end time of ε, which brings about his public effective preference for p in (22b). Clearly, the two are the same and a reduction analogous to (14′) above can apply.

Suppose we extended the argument to the English progressive. If by some mechanism we obtain that $\varepsilon = e' = e$, this leads to a contradiction due to the stage requirement. Since e' is a strict stage of e, it means that the two cannot be identical. For Slovenian, on the other hand, assuming that the three variables can be mapped to the same event in the domain, it straightforwardly follows, using the semantics of C&L, that a promise has been made. In other words, we can explain the following entailment, formulated by Searle:

(23) In the formal mode we could say that we need to show how (assuming certain contextual conditions are satisfied) the statement: "John made a self-referential statement to the effect that his utterance was a promise that p" entails, as a matter of logic, "John made a promise that p" (Searle, 1989: 544)

Notice that Searle's quote is interested in how one can derive the performative effect on the assumption that John's statement is self-referential. The intuition behind this, which can be made explicit in English by the use of *hereby*, is that an appropriate utterance of *I promise to come* says of itself that it is a promise (and the challenge is to show that it is in fact a promise). While the **self-referential** nature of performative utterances is commonly acknowledged in the literature, it is rarely formally spelled-out.[16]

[16] In C&L's analysis, self-referentiality is a by-product of the self-verification process (the utterance event is computed to be a witness for the existential statement through the self-verification process). However, one could argue that the reason why this can be done automatically is precisely because of the aforementioned assumption about times. Admittedly, however, the latter is strictly weaker than assuming that performatives are self-referential. Namely, it is weaker to assume that

Eckardt's (2012) account of English perfective performatives is one of the rare exceptions. Eckardt proposes that, given a performative utterance, the existential quantification over the event variable is a 'version of specific existential statement' in the sense that the assignment function is able to pick not just some event from the domain but a specific one.[17] Unfortunately, this is all that Eckardt says on the matter, except for adding that she does not think of it as a vanilla specific indefinite, as proposed in the literature on individuals.

While this mechanism could be, somewhat vaguely, used to ensure the self-referential character of a perfective performative utterance, it is crucial to observe that imperfective performatives require something stronger. In (21) where variable e' describes a partial promise and e describes its completed version, Eckardt's assignment function should not only map e' to the actual utterance event (which would give us that the utterance is a possibly incomplete promise) but it should also map the other variable, namely e, to the actual utterance event. As mentioned in §3.2.2, a self-referential imperfective performative sentence cannot describe itself as a partial promise (though it can describe other, salient events as partial promises). In order to derive the performative effect we therefore need to map both variables onto the actual utterance event.

While there is no principled reason to suggest why this shouldn't be possible with Eckardt's assignment function, this is not entirely surprising since we know little of what might govern its behaviour. In the following chapter I propose a more general way of executing some of Eckardt's intuition by relating it to anaphoric behaviour.

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the event described by the utterance and the utterance itself have the same duration than it is to assume that they actually are one and the same event (in which case it follows that their duration is the same).

[17] Eckardt (2012) writes the following, R and S are topic time and speech time (more precisely, the Reichenbachian reference time and speech time) and ε_{54} is a particular communicative event:

(1) $[\![\exists e(\textsc{Promise}(\mathbf{sp}, e, \mathbf{q(sp)}, w_0) \wedge \tau(e) \subseteq R \wedge R = S)]\!]^{\mathcal{M},g} = 1$ because
$[\![\textsc{Promise}(\mathbf{sp}, e, \mathbf{q(sp)}, w_0) \wedge \tau(e) \subseteq R \wedge R = S]\!]^{\mathcal{M},g(e/\varepsilon_{54})} = 1$

Chapter 5

Towards a Formal Analysis of Self-Referentiality

The previous section explained why an independent account of self-referentiality could provide us with the opportunity to derive that a self-referential imperfective performative sentence is also a performative utterance. While I showed that Condoravdi and Lauer's analysis can be made compatible with such an account, the proposal sketched here does not depend on their particular view of performativity. It is a general attempt at formalising the self-referential character of performative utterances. I spell out a toy system to explain what ingredients one needs and how they interact with aspectual pairs like *obljubim*$_{\text{PF}}$/*obljubljam*$_{\text{IPF}}$ (I promise), which have both perfective and imperfective performatives. I also touch upon English performatives and non-performative uses, and discuss extensions of the system.

5.1 General Idea

Going back to the seminal work of Partee (1973), it has often been observed that variables such as pronouns behave in three distinct ways. They have deictic, anaphoric and bound uses:

(24) a. Deictic: (with a pointing gesture) ***He*** *shouldn't be in here.* (Partee, 1973: 603)

b. Anaphoric: *Sam took the car yesterday and Sheila took* ***it*** *today.* (Partee, 1973: 605)

c. Bound: *Every student spoke to the student in front of* ***him****.* (Partee, 1973: 606)

In the first example, *he* refers to some salient individual in the context, in the second, *it* is anaphoric to the previously-introduced *the car*, while in the third *him* varies with every student. Partee's seminal paper draws a parallel between the behaviour of pronouns and tenses. Interestingly, this analogy can be extended to cover events introduced by performative verbs:

(25) a. Deictic: *I promise to come.* (on the self-referential reading)
b. Anaphoric: *Go to bed.* [Nothing happens ...] *I am ordering you.* (Condoravdi & Lauer, 2013: 20)
c. Bound: *Every time John spoke he promised me something.*

If the first sentence is uttered performatively, the contextually accessible utterance event is described as a promise. In the second example, there is arguably a cross-sentential anaphoric dependency: the speaker redescribes his previous utterance event as an order. The natural reading of the third example is one on which John's utterances consist of promises.[1] My claim is not that this behaviour is unique to performative verbs. The claim is that there is an analogy to be explored between performative verbs and anaphoric expressions such as pronouns.

In event semantics the logical rendering of the three examples in (25) involves existential quantification over events. The intuitive identification of promises with utterances in (25c), for example, cannot be straightforwardly accounted for if we keep on existentially introducing new events. We somehow need to be able to relate to old information, which is what pronouns and definite expressions typically do.

Discourse Representation Theory (DRT) (Kamp & Reyle, 1993; Kamp et al., 2011) was originally developed to account for discourse dependencies of pronouns and tense. Existential quantification takes the shape of the introduction of a new discourse referent into the universe of a discourse representation structure (DRS), while pronouns are items that look to be resolved (bound) to some accessible referent. Consider, for example, the donkey sentence *Every farmer who owns a donkey beats it*. DRT is set-up in such a way that *it* can be resolved to the discourse referent introduced by *a donkey*.

[1] Without contextual information, the sentence does not seem to convey that for all those times when there was a speaking event by John, there was a potentially different promise event by John (e.g. in writing, or some other form of communication), i.e. $\forall t[[\exists e(at(t,e) \wedge speak(e,j))] \rightarrow \exists e'(at(t,e') \wedge promise(e',j))]$ where at is an ad hoc predicate introduced to represent the information that an event occurs at a time. Rather, the reading seems to be such that John's utterances *are* promises: $\forall t \forall e[(at(t,e) \wedge speak(e,j)) \rightarrow promise(e,j)]$. Notice that such a reading of the sentence is not completely parallel to Partee's example, but it is a case of binding nevertheless.

One of the ideas put forth in this thesis is to use the machinery of anaphora resolution for events. Before I can explain the general idea, however, let us for a moment look at how Lauer (2013) proposes to understand explicit performative verbs. They are taken to be predicates that:

(i) predicate the existence of a communicative event, and

(ii) the only things they require of this event can be characterized in terms of
   a. the resulting commitments of the speaker, and
   b. possibly additional (presuppositional) constraints on the speaker's attitudes.

(Lauer, 2013: 199)

While verbs are in event semantics typically taken to denote a set of events and existential quantification is obtained via the so-called existential closure (an operation applying at the end of the derivation that transforms the set of events into an existential statement), Champollion (2011, 2014) has for example recently proposed that the verb itself might encode the existence of an event.[2] Let us take component (i) to be part of the lexical entry of a performative verb.

I propose that the existence of a communicative event is part of the **non-asserted** content of a performative verb. As a first approximation, let us think of this content as presupposed (in the following section we will compare its behaviour to vanilla presuppositions in more detail and see how the two differ). The first task is to establish a parallel between presuppositions and pronouns, to be able to account for the pronoun-like behaviour observed in (25).

Expanding on the framework of DRT, **van der Sandt (1992)** proposes to treat pronouns and presuppositions on a par as anaphoric expressions looking to be bound to some previously-established and discourse-accessible referent. (Notice a shift in the now-more-general use of the terms anaphoric and bound, cf. (24).) The difference between the two shows up when such an antecedent cannot be found: van der Sandt argues that pronouns are unable to 'accommodate' the antecedent (adjust/repair the context to make it contain it) due to the lack of descriptive content. Consider, for example, *Yesterday she came to the party*. If the discourse provides no salient antecedent for *she*, the natural response is to ask *who?* since the addressee is not able to simply accommodate one.[3] (Contrast this with *Yesterday the president of Slovenia came to the party*, for example.) Accommodation is proposed to be a mechanism that 'creates a discourse referent, provides it with descriptive material associated with the presuppositional

[2] To illustrate, *rain* receives the following lexical entry: $[\![\text{rain}]\!] = \lambda f_{\langle v,t\rangle} \exists e[\textbf{rain}(e) \wedge f(e)]$ (Champollion, 2014: 5), v being the type of events. A closure operator ($\lambda e.true$) is assumed to apply at the end to close off abstraction over f. I return to a discussion of this in §5.4.

[3] It is interesting that (over)hearers seem to be able to accommodate more that the addressee. See Zeevat (1999: 282–283) for some discussion.

expression, and thus establishes an accessible antecedent' (van der Sandt, 1992: 351). Unlike presuppositions, pronouns seem to resist accommodation. For this reason we will eventually argue that performative verbs are more similar to presuppositions than pronouns.

Proposing to encode the existence of a communicative event as part of the non-asserted content of a performative verb is in light of this theory seen as encoding an event discourse referent that looks to be resolved with some communicative event. In the case of performative utterances, we will see, this event resolves to the actual utterance event.[4] The idea is that the asserted content then specifies of this referent that it is for example a promise (more precisely, it is asserted that this event gives rise to certain speaker commitments). Consider the following illustration, with the non-asserted (anaphoric) content in a separate DRS, prefixed with an up-arrow sign to distinguish it from the rest:

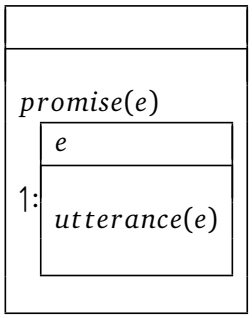

Figure 5.1: DRS Illustration

The idea is that e being a promise is part of the asserted content, while it being an utterance (more generally, a communicative event) is part of the non-asserted content. Event e looks to be resolved in such a way that its condition $utterance(e)$ is satisfied. In other words, it looks to identify with an accessible utterance event. The theory of van der Sandt assumes a fixed way of how such a search (for a suitable antecedent) should proceed and what binding results should be obtained. A variety of nominal expressions is therefore predicted to behave in the same way. This approach essentially leaves us with two options: e behaves either like a pronominal anaphor or like a presuppositional anaphor. Hunter (2013) and Hunter & Asher (2005) have argued against such a fixed view of anaphora resolution. On their view, each anaphoric item comes with its

[4]Using Zeevat's (1999) idea that utterance information (e.g. event and agent) is available for anaphoric pick-up, we can then represent discourse structure in such a way as to allow for the promise event to be anaphorically resolved to the actual utterance event. This is how we can obtain self-referentiality and consequently, as argued in §4.3.2, performativity.

own resolution strategy, encoded in the form of an operator. For this purpose the authors sketch several such operators. I will follow this view and use a fresh symbol '↿' (cf. Figure 5.1). In the following section we look at the behaviour of performative verbs to better understand what resolution strategy might be required by '↿'.

5.2 Resolution Strategy

Performative verbs have been argued to come with certain presuppositions. Verb *promise*, for example, has been proposed to presuppose that at the time of promising the addressee has a stake in whether the promise is fulfilled and that 'the promiser is able to ensure the truth of what is promised' (Lauer, 2013: 188). We are not interested in these presuppositions and in the potential resolution strategies that are encoded with them. We explore the idea that a performative sentence is used for asserting something about some communicative event (e.g. that it is a promise). Roughly speaking, we are interested in the anaphoric dependency between a promise event and an utterance event.

We can explore this dependency along two dimensions. As mentioned, we can distinguish between **binding**, where an anaphoric discourse referent is bound to some accessible antecedent, and **accommodation**, where such an antecedent is accommodated and the referent bound to it.[5] Scholars in the presupposition tradition distinguish between **global** and **local** contexts, here levels of representation.[6] Roughly, the idea is that a presupposition can be triggered by an element embedded in the sentence (e.g. under negation or in the consequent of a conditional) and that presupposition will crucially depend not only on 'the context of utterance' (van der Sandt, 1992: 348) or 'the universe of the main DRS' (Kamp et al., 2011: 273), i.e. the global level, but also on the material contributed by the sentence itself (e.g. on material above negation or in the antecedent of the conditional).

In the following section we examine the behaviour of the non-asserted content of a performative verb with respect to local binding, global binding, global accommodation, and local accommodation. The original proposal by van der Sandt (1992) is that the four options should be preferred in this particular order. We can write this as $BIN_{loc} > BIN_{gl} > ACC_{gl} > ACC_{loc}$, where $>$ can be read as 'is preferred to'. Hunter & Asher (2005), on the other hand, argue

[5] For presuppositions the former has been traditionally understood as presupposition satisfaction or neutralisation and the latter as presupposition projection (van der Sandt, 1992: 345).

[6] I take local to be synonymous with non-global, rather than distinguishing between global, intermediate, and local contexts.

for an item-specific approach, where each anaphor encodes its own resolution strategy.[7] Let us in what follows take van der Sandt's ranking as a basis and see where performative verbs differ.

5.2.1 Accommodation

One of the characteristics of the phenomenon in question is that it is very easy to accommodate the existence of a communicative event. For example, *Yesterday John promised to come to the party* is very natural in a setting with no prior knowledge of communication between John and the speaker. The addressee can adjust the context to one in which there was an event of communication between John and the speaker just as the addressee of *My cat is ill*, for example, adjusts the context to one in which the speaker owns a cat.

To see the difference between global and local accommodation of a presupposition, let us consider a discourse initial utterance of the following sentence:

(26) *If John has grandchildren, his children are happy.* (van der Sandt, 1992: 370)

The expression *his children* triggers the presupposition that there is a male person such that there are children that he owns. Let us assume that the male person has been identified with John and that we now wish to resolve the presupposition that there are children that John has.[8] Notice that there is no suitable antecedent for children. In particular, John's grandchildren are not a suitable anaphoric antecedent (under normal circumstances John's children cannot also be his grandchildren). The addressee needs to accommodate the existence of John's children at some level of representation. Global accommodation yields the most natural reading: John has children and if he has grandchildren, his children are happy. On this reading sentence (26) as a whole presupposes that John has children and it might be continued with *They wanted to have offspring long ago* (van der Sandt, 1992: 371). Alternatively, van der Sandt observes that one can accommodate the existence of John's children in the antecedent of the conditional (locally). A paraphrase of this reading is *If John has grandchildren and (thus) children, his children will be happy* (van der Sandt, 1992: 371).

In contrast to presuppositions, which typically accommodate globally, it seems that the existence of a communicative event is typically accommodated locally. Consider, for instance, the following example:

[7] For example, *the president* and *the actual president* are argued to differ in their presupposition resolution strategies. Similar arguments are made for *I* and *the speaker* in Hunter (2013).

[8] In van der Sandt (1992) the first step is to globally accommodate the existence of John and bind *his* to the discourse referent thereby introduced.

(27) *Yesterday John didn't promise to come to the party.*

The straightforward reading is one on which there was no event yesterday such that it would be a communicative and a promise event. That is, the event discourse referent (together with the condition that it is an utterance) is accommodated locally under negation (i.e. within the negated DRS). However, intuition suggests that it is also possible to understand *Yesterday John didn't promise to come to the party* as John having said something, namely that he does not promise to come.[9] On this reading the referent is accommodated globally, above negation. Recall that the condition that it is a promise is not anaphoric and therefore remains in situ, i.e. under negation.

It has been observed that 'the event quantifier always takes lowest possible scope with respect to other scope taking elements' (Champollion, 2011: 5). It is then easy to see why we would expect DRT accommodation to always be local, with the event discourse referent being introduced below negation in this case. The global accommodation reading described above seems to be somewhat of an exception. While further investigation is needed, let us tentatively propose that local accommodation is preferred to global accommodation, i.e. $ACC_{loc} > ACC_{gl}$.

5.2.2 Binding

As observed earlier, the self-referential nature of a performative utterance can be formalised in terms of binding to the actual utterance event. For example, *I promise to come* has a reading on which the promise event *is* the actual utterance event. Hunter (2013) takes the level of discourse at which extra-linguistic information is hosted, such as information about the actual utterance event, to be the most global level. Performative utterances can thus be considered instances of global binding.

Jary observes that 'in a minimal context, the performative reading will be most likely' (2007: 222). That is, the utterance of an explicit performative sentence, such as *I promise to come*, seems to almost by default come out as a performative utterance. In our framework we can explain this by giving priority to binding, rather than accommodation. That is, the resolution strategy is such that binding is preferred over accommodation ($BIN > ACC$). This is consistent with van der Sandt's proposal, where binding is also preferable to accommodation.

[9] I find this reading natural in a situation in which there is an upcoming party and somebody comes up to me to tell me *Yesterday John didn't promise to come to the party*. I infer that he somehow indicated that he does not promise to come.

Let us now examine binding in the presence of scope taking operators, such as negation.

(28) *I don't promise to come to the party.*

Global binding to the actual utterance event yields the reading that the utterance of (28) is not a promise to come to the party. Eckardt rightfully observes that statements of this kind are not very informative – 'the speaker could indeed *give* a promise with her very next utterance' (Eckardt, 2012: 37). One tends to understand the utterance as 'negating the existence of promises in general instead of simply denying the ongoing utterance the status of a promise' (Eckardt, 2012: 38).[10] This reading (which is just local accommodation) is much stronger, which suggests that informativeness can influence the resolution strategy of the event anaphor.[11]

A similar concern arises with definite descriptions in Hunter (2013: 407, footnote 21), where an optimality theoretic solution is mentioned. It seems reasonable that the preference ranking is not as simple as sketched out here but that other constraints interact with it. Let us therefore tentatively integrate BIN_{gl} into the **preference order** as follows: $BIN_{gl} > ACC_{loc} > ACC_{gl}$, where informativeness can for example demote BIN_{gl} in favour of ACC_{loc} as in (28) where local accommodation is in fact preferred to the global binding reading.[12]

Let us now turn to local binding. Consider for example reported speech. Lauer (2013: 182) observes that *I promise to come to the party* can be reported as *John promised to come to the party* as well as *John said he promises to come to the party*. Recall that we proposed to see the former as a case of accommodation. Since verbs of saying denote communicative events, they arguably create a possible anaphoric antecedent to the utterance/communicative event introduced by the performative verb. Consider:

(29) *John said he promised to come to the party.*

[10] Let us leave aside other, reinforced readings with performative verbs such as *I do not apologise* $\sim$ *I refuse to apologise*, or Eckardt's *I hereby do not promise anything* $\sim$ *I hereby promise not to promise anything*. These require an investigation of performativity in their own right.

[11] It does not seem to me that global binding over negation is always impossible, but the matter requires further investigation. Consider for example a murder investigation scenario where the detective receives a secret message from a key witness: *I do not deny that the murderer was accompanied by a white dog*. The message can arguably be understood as an assertion of it not being a denial.

[12] One might wonder why not adopt van der Sandt's ordering in the first place and take his $ACC_{gl} > ACC_{loc}$ to also be subject to this informativeness constraint. This is a valid point and it would eventually need to be settled when a proper formalisation of the ranking is provided.

This example could be seen as a case of binding: John's utterance was a promise. Binding is not global here because the utterance of (29) is not a promise, but a report on what John said. Similarly one could understand *John didn't say he promised come* as conveying that there was no utterance-promise event.[13]

Further investigation is needed to see whether global or local binding is preferred, and it essentially amounts to examining sentences such as *I say I promise to come*. These constructions are fairly unnatural and since the purpose of the last two sections was to merely sketch out some tendencies, I will not investigate this further. We can for now simply follow van der Sandt (1992) in taking local binding to be preferred to global binding. In our notation, $BIN_{loc} > BIN_{gl}$.

We have been interested in the resolution tendencies of the non-asserted content of a performative verb like *promise*. This short investigation suggested the preference order to be $BIN_{loc} > BIN_{gl} > ACC_{loc} > ACC_{gl}$, which can be violated further by considerations of informativeness. The latter option makes the ranking more flexible than van der Sandt's proposed resolution order. Unlike van der Sandt we have also ranked local accommodation higher than global accommodation, though this might eventually be reconsidered (cf. footnote 12). Further investigation is of course needed to determine whether the tentative conclusions of the last two sections are right.

If one is still not convinced that the utterance event condition should be part of the non-asserted content, let us conclude this section by considering for a moment that it is in fact asserted, as Condoravdi & Lauer (2011) seem to propose. There are in this case two asserted conditions: there is an event such that it is an utterance (communicative) event and it gives rise to certain preferential commitments, see (45) in Appendix. Meta-linguistic negation can negate the second condition, i.e. the nature of the preferential commitments, as in *I didn't ask you to come, I ordered it*. One would thus expect it to also be able to focus only the first condition (without negating the second one). However, being an event of communication seems to be a prerequisite for something to be a promise (i.e. give rise to such preferential commitments). Consider the following utterance:

(30) *I didn't promise to come, because I wasn't (even) there.*

It seems impossible for this to convey that a promise was somehow still made. Rather, it is similar to the cases where meta-linguistic negation targets a presupposition, as in *My cat is not dead, because I don't (even) have one*. I will

[13] A good example of local binding is also (25c), which we discuss later in §5.4.2.

therefore take these considerations together with the binding and accommodation patterns observed as sufficient evidence for claiming that the utterance condition is not part of the asserted content.

5.3 Formal Illustration

This section formally illustrates how the ideas outlined so far combine to produce a self-referential, performative utterance. An important part of this section is the formalisation of imperfective performatives, for which further assumptions are needed than what was outlined in §5.1. A discussion of non-self-referential uses of performative sentences is postponed until §5.4.

5.3.1 Toy System

The purpose of this section is to give us tools with which we can better understand how the performative effect is derived. We will therefore adopt an extremely simple version of DRT that contains just enough to get the main point across. We build on the two-stage version of DRT first introduced by van der Sandt (1992). Let us first define the language and syntax.

Definition 1 (Language $\mathscr{L}_{min}$)**.** *Our DRT language $\mathscr{L}_{min}$ contains:*
(i) set $\mathscr{R}$ of discourse referents/markers
(ii) logical symbols: $\Rightarrow, =$
(iii) unary predicates: P, U
(iv) binary predicates: $\sqsubseteq, \sqsubset$
(v) unary operator: $\uparrow$

The language is very simple. We have some variables in the set of discourse referents and we have the logical symbols for implication and equality (this will suffice). We will use predicates P and U for promises and utterances, respectively. We will not encode possible worlds, which is why the stagehood relation ($\sqsubseteq, \sqsubset$) is now a simple binary predicate. We also take our language to contain the aforementioned unary operator $\uparrow$.

Definition 2 (Syntax of $\mathscr{L}_{min}$)**.** *Definition of* DRS*s and* DRS*-conditions:*
(i) if $U^K \subseteq \mathscr{R}$, Con^K is a (possibly empty) set of conditions and A^K is a (possibly empty) set of conditions, then $K := \langle U^K, Con^K, A^K \rangle$ is a DRS
(ii) if $e \in \mathscr{R}$, then $P(e)$ and $U(e)$ are conditions
(iii) if $e, e' \in \mathscr{R}$, then $e = e'$, $e \sqsubseteq e'$, and $e \sqsubset e'$ are conditions
(iv) if K and K' are DRS*s, then $K \Rightarrow K'$ is a condition*
(v) if K is a DRS*, then $\uparrow K$ is a condition*

Conditions (ii) and (iii) define simple conditions, whereas conditions (iv) and (v) define complex conditions of a DRS. The first condition defines the structure of a discourse representation (it defines what a DRS is). Following van der Sandt (1992), we take it to be a triple (rather than a pair, as in the original formulation of DRT) consisting of a universe of discourse referents or markers (DREFs), a set of conditions and the so-called A-structure (anaphoric structure). Unlike van der Sandt, however, we take A-structure to also be a set of conditions, rather than a set of DRSs. This is a minimal change that allows us to assume that some DRSs are prefixed with an operator defining their resolution strategy.[14]

As mentioned above, we follow van der Sandt (1992) in assuming a **two-stage DRT**. The first stage of construction works bottom-up from the syntactic parse and results in the so-called preliminary or unresolved DRS. We will not specify how this stage is obtained. In simple terms, a preliminary DRS is a DRS with a non-empty A-structure. I assume that only conditions constructed according to the rule in (v) can appear as part of A-structure in a preliminary DRS (see footnote 14). Note that van der Sandt assumes that an anaphoric expression can further embed another anaphoric expressions. This is not precluded in this setting (where A-structure is a set of conditions) since DRS conditions formed according to rule (v) are complex and can embed further conditions.

The preliminary DRS is merged with the existing structure according to the following rule (after van der Sandt, 1992: 355):

Definition 3 (Merge)**.** (to be amended) *Given two* DRS*s* K *and* K'*, the merge of* K *with* K' *is defined as follows:* $K \sqcup K' := \langle U^K \cup U^{K'},\ Con^K \cup Con^{K'},\ A^K \cup A^{K'} \rangle$

The resulting structure can still contain a number of unresolved anaphors. It is fed to a postulated **algorithm** that computes their (preferred) resolution with respect to what DRT determines to be *possible* and *admissible*, see Appendix for these definitions.[15] We will assume here that the semantics of ↿ can be specified along the lines of the properties observed in the previous section and in such a way that the overall algorithm is able to take it into account when computing the *preferred* resolution.

[14] Just like van der Sandt needs to assume that DRSs corresponding to presuppositions are part of A-structure, we assume here that only conditions of the form ↿ K where K is a DRS can appear in A-structure. This can be done on the level of the lexicon, and possibly other rules, since the rest of the DRS construction algorithm is such that no non-A-structure can be added to A-structure at some subsequent step (in particular, we will see later that merge keeps A-structures separate).

[15] As mentioned, such an algorithm could be formed within optimality theory, for example. See footnote 2 in Zeevat (1999: 280) and the references therein.

In order to understand the notion of binding and accommodation in van der Sandt's framework, we would also need to introduce the notion of **subordination**, **projection lines**, and **accessibility**. These notions are important but the definitions are too complicated for what is needed in the following section. I therefore explain the intuitive idea here and list the definitions in the Appendix. The author himself provides a nice summary of the first two notions:

(31) Subordination imposes a tree-structure on DRSs, which extends inside A-structures. It tells us which markers are accessible from a given marker and thus can be identified with it. [...] A projection line is one path through an accessibility tree from a sub-DRS to the root of the tree. It tells us which route an anaphor must take when it is projected to a higher position in a DRS.

(van der Sandt, 1992: 356)

Let us illustrate the two notions with a very simple example. Consider a DRS K that contains only one element in its A-structure: $\restriction K'$, where K' is a DRS. One of the conditions of subordination would specify that in this case K (immediately) subordinates K'. In other words, K' is (immediately) subordinated to K. We would also say that K is on the projection line of K'.

The notion of accessibility is understood as 'a relation between members of the universe of an A-structure and established markers' (van der Sandt, 1992: 356). Established markers are never properly defined but we can understand them as discourse referents that are not contained (or no longer contained) within A-structure. Let us consider the minimal example from above and suppose that K' has in its universe the referent k' and K has in its universe the referent k. The definition of accessibility would give us that k is accessible to k' because of the subordination relationship between the two. Since accessibility is defined with respect to established markers, an anaphoric discourse referent cannot access a discourse referent in its own or some superordinate A-structure (van der Sandt, 1992: 356). In other words, an anaphoric discourse referent will 'always be resolved outside an A-structure' (van der Sandt, 1992: 356).

Let us now conclude the exposition of preliminary (unresolved) DRSs by incorporating van der Sandt's notion of resolution as binding and accommodation. We slightly amend his definition:[16]

Definition 4 (Resolution: Binding and Accommodation)**.** *Let K be a* DRS*. Let $\restriction S$ be an element of an A-structure of some sub-*DRS *of K. S is the 'source' of the relevant anaphoric content. Let its A-structure A^S be empty and let $U^S := \{s_1, \ldots, s_n\}$. Let*

[16] We take f to map into X, as defined, since van der Sandt's original formulation (in Appendix) is unclear in light of his other definitions. Thanks to Maria Aloni (p.c.) for pointing out the latter.

*the 'target' of this anaphoric content be a (sub)*DRS *T of K such that it is located on S's projection line. Let* $X := \{t_1, \ldots, t_n\}$ *collect all established markers accessible from* U^S *that are either in the universe of T or in the universes of* DRS*s that are on the projection line of S and are higher than T. Let f be a function from* U^S *to X, such that the conditions of T are compatible with the conditions of S under the substitution of* $s_1, \ldots, s_n$ *for* $t_1, \ldots, t_n$*. The resolution of the anaphoric structure of S with respect to T yields a* DRS K'*, which differs from K in the following respects:*

Binding

(i) $U^{S'} = Con^{S'} = \emptyset$

(ii) $U^{T'} = U^S \cup U^T$

(iii) $Con^{T'} = Con^S \cup Con^T \cup \{t = s \mid t = f(s)\}$

Accommodation

(i) $U^{S'} = Con^{S'} = \emptyset$

(ii) $U^{T'} = U^S \cup U^T$

(iii) $Con^{T'} = Con^S \cup Con^T$

This definition specifies how the overall discourse structure is transformed once a resolution site (target T) has been chosen for some anaphoric content (source S). One of the preconditions for such a step is that the A-structure of the source DRS is empty (we start processing the most embedded DRS in an A-structure).[17] Condition (i) tells us that the remaining two components of S (its universe and conditions) should be emptied. Thus, S becomes $S' = \langle \emptyset, \emptyset, \emptyset \rangle$. The second and third condition specify the transformation of the target. Condition (ii) tells us that anaphoric referents from the source are added to the universe of T. Condition (iii) specifies that the conditions on these referents are also transferred to T. The way in which binding and accommodation differ is that extra conditions are added to the target DRS in the case of binding. These conditions identify anaphoric discourse referents from S with the established ones in X (and the identifying conditions are transferred to T). Notice that a DRS condition (e.g. that the event is a promise) that appears outside of S and contains variables from U^S can in such a way be 'bound' by established markers. We will illustrate this in more detail in the following section.

Once all A-structure has been processed in a given DRS, we obtain a **resolved** or proper DRS. This is a DRS that does not have any free discourse referents or non-empty A-structure (van der Sandt, 1992: 357).[18] Such DRSs are then

[17] See Appendix for further restrictions on possible and admissible resolutions.

[18] 'A discourse marker u is free in a condition C of a DRS K just in case u occurs in C and $u \notin Acc(K)$' (van der Sandt, 1992: 364), where $Acc(K)$ can be understood as U^K together with all $U^{K'}$ with K' being a DRS on the projection line of K.

interpreted in a model. Let us first specify the type of structure that we will use to interpret the (remaining) structures of $\mathscr{L}_{min}$.

Definition 5 (Frames of $\mathscr{L}_{min}$)**.** *$\mathscr{F} := \langle \mathscr{D}, \leq, < \rangle$ is a frame of $\mathscr{L}_{min}$ where $\mathscr{D}$ is a non-empty set of events, $\leq \subseteq \mathscr{D} \times \mathscr{D}$ is a partial order (reflexive, transitive, antisymmetric), called the part-hood relation, and $<:= \{(x, y) \in \mathscr{D} \times \mathscr{D} \mid x \leq y \wedge x \neq y\}$.*[19]

This structure provides us with a domain of events and a basic ordering on it. We minimally require that the non-strict part-hood relation should be a partial order and we define its strict version in the usual way. One would most likely want to impose other constraints on the part-hood relation, but I will not do so here.[20] Notice that we will not use possible worlds (or individuals or times for that matter). The reason for this is that the crucial difference between English and Slovenian that we aim to capture in terms of the performative effect (see §4.3) lies in the strictness of the stage-of relation between events. We will define this relation below on the basis of the part-hood relation, which is why such frames are sufficient to capture this distinction.

Definition 6 (Models of $\mathscr{L}_{min}$)**.** *$\mathscr{M} := \langle \mathscr{F}, \mathscr{I} \rangle$ is a model of $\mathscr{L}_{min}$ where $\mathscr{F}$ is a frame of $\mathscr{L}_{min}$ and $\mathscr{I}$ is the interpretation function such that it maps each n-ary predicate of $\mathscr{L}_{min}$ to a subset of $\mathscr{D}^n$.*

In order to specify the semantics, we need to introduce the notion of extending an assignment function with respect to some DRS.

Definition 7 (Extension)**.** *A function f is an extension of function g with respect to* DRS *K when $g \subseteq f$ and $Dom(f) = Dom(g) \cup U^K$. Shorthand notation: $g \subseteq_{U^K} f$.*
(after Geurts & Beaver, 2011)

Definition 8 (Truth in $\mathscr{L}_{min}$)**.** *Let $\mathscr{M}$ be a model of $\mathscr{L}_{min}$ and g an assignment function:*

$\mathscr{M}, g \vDash \langle U^K, Con^K, \emptyset \rangle$ iff there is a function h such that $g \subseteq_{U^K} h$ and for all conditions C in Con^K: $\mathscr{M}, h \vDash C$, where

(i) $\mathscr{M}, h \vDash P(e)$ iff $h(e) \in \mathscr{I}(P)$

(ii) $\mathscr{M}, h \vDash U(e)$ iff $h(e) \in \mathscr{I}(U)$

(iii) $\mathscr{M}, h \vDash e = e'$ iff $h(e) = h(e')$

(iv) $\mathscr{M}, h \vDash e' \sqsubseteq e$ iff $h(e') \leq h(e)$[21]

[19] Let $x, y, z \in \mathscr{D}$ be arbitrary. Reflexivity: $x \leq x$, transitivity: $(x \leq y \wedge y \leq z) \rightarrow x \leq z$, antisymmetry: $(x \leq y \wedge y \leq x) \rightarrow x = y$.

[20] See Krifka (1998) or Landman (1992), for example.

[21] This is of course a big oversimplification but since our ontology lacks worlds and times, we cannot at this point specify the stagehood relation further.

(v) $\mathcal{M}, h \vDash e' \sqsubset e$ *iff* $h(e') < h(e)$

(vi) $\mathcal{M}, h \vDash K_1 \Rightarrow K_2$ *iff for all* f *such that* $h \subseteq_{U^{K_1}} f$ *and* $\mathcal{M}, f \vDash K_1$*, there is an* f' *such that* $f \subseteq_{U^{K_2}} f'$ *and* $\mathcal{M}, f' \vDash K_2$

The semantics is specified for a *resolved* DRS.[22] Recall that a resolved DRS has no free variables and has an empty A-structure. A resolved DRS is true in $\mathcal{M}$ with respect to g when there is an embedding function h for K onto $\mathcal{M}$ (called a verifying embedding) such that it extends g for the variables in U^K and makes all the conditions of K true in $\mathcal{M}$. Conditions (ii)–(iii) are straightforward from predicate logic. Conditions (iv)–(v) specify the semantics of the stagehood relation. It is defined in terms of the part-hood relation, which is in turn defined on the elements of the domain. Further conditions on the stagehood relation would need to be added but we will not do so here since the simplification is not significant for the point made in the following section. The last clause specifies the verification of an implication. Roughly, for every verifying embedding of the antecedent, there must be a further verifying embedding of the consequent.

Following Zeevat (1999) we can take it that DRT should store not only information provided by the content of an **utterance**, but should also represent the utterance itself as well as its agent, time, location, etc. This is a particularly natural move if one considers DRT to be modelling language interpretation, as Zeevat (1999) does. We adopt the idea of an utterance DRS, which we simply take to be an externally anchored DRS, with the following definitions for external anchoring adapted from Zeevat (1999) and Kamp & Reyle (1993: 248):[23]

Definition 9 (Anchored DRS)**.** *If* K *is a* DRS *and* f *a partial assignment function whose domain is the universe of* K*, then* $\langle K, f \rangle$ *is an anchored* DRS*.*

Definition 10 (Truth for Anchored DRS)**.** *Let* $\langle K, f \rangle$ *be an anchored* DRS *with* $K := \langle U^K, Con^K, \emptyset \rangle$*,* $\mathcal{M}$ *a model of* $\mathcal{L}_{min}$ *and* g *an assignment function:*

$\mathcal{M}, g \vDash \langle K, f \rangle$ *iff there is a function* h *such that* $g \subseteq_{U^K} h$ *and* $f \subseteq h$ *and for all conditions* C *in* Con^K*:* $\mathcal{M}, h \vDash C$

This differs minimally from the truth-conditions proposed above. The difference lies in that we require the embedding function h to agree with the anchor (in addition to it extending g for the referents in U^K and verifying all the conditions). We can therefore see anchors as constraints on assignment functions. We can follow Zeevat in assuming that perception plays a crucial role

[22] The semantics was adapted from Kamp et al. (2011: 148), Kamp & Reyle (1993), and Geurts & Beaver (2011).

[23] Zeevat eventually develops intensional anchors as a preferable alternative to external anchoring, see Zeevat (1999: 298) for arguments. See also §5.4.

in anchoring: whenever an utterance is perceived it is anchored to the discourse referent representing it.[24]

In the following section we will need to merge an anchored DRS with an unanchored one. The definition of merge from earlier does not tell us how this should be done, so let us simply adapt it at this point. We generalise and define the merge of anchored DRSs, where an unanchored DRS can be seen as a DRS with an empty anchor.[25]

Definition 11 (Merge)**.** *Given two anchored* DRS*s* $\langle K, f\rangle$ *and* $\langle K', f'\rangle$*, the merge of* $\langle K, f\rangle$ *with* $\langle K', f'\rangle$ *is defined as follows:* $\langle K, f\rangle \sqcup \langle K', f'\rangle := \langle\langle U^K \cup U^{K'},\ Con^K \cup Con^{K'},\ A^K \cup A^{K'}\rangle, f \cup f'\rangle$.

We now have all the ingredients of the toy system and can put it to work.

5.3.2 Deriving Performativity

In this section we derive the self-referential nature of Slovenian perfective and imperfective performative utterances, and discuss the English progressive.

5.3.2.1 Perfective Performatives

Consider the following example with the perfective:

(32) *Obljubim*. (I promise$_{\text{PF}}$)

Let us interpret this sentence against model $\mathscr{M} := \langle \mathscr{D}, \leq, <, \mathscr{I}\rangle$ of $\mathscr{L}_{min}$ and assignment function g and, for simplicity, the empty context. The latter means that the utterance DRS is first merged with an empty DRS, which yields simply the utterance DRS itself. Let us suppose that the utterance event gets anchored to $\varepsilon \in \mathscr{D}$. We obtain the utterance DRS $\langle\langle\{e\}, \{U(e)\}, \emptyset\rangle, \{\langle e, \varepsilon\rangle\}\rangle$, illustrated in Figure 5.2 in box notation.

The next step is to merge the utterance DRS with the preliminary representation of the sentence. We take the latter to be $\langle\emptyset, \{P(e')\}, \{\ ⇂\ \langle\{e'\}, \{U(e')\}, \emptyset\rangle\ \}\rangle$, illustrated in Figure 5.3. Merge is a simple operation of unioning the different components. We obtain DRS $\langle\langle\{e\}, \{U(e), P(e')\}, \{⇂\ \langle\{e'\}, \{U(e')\}, \emptyset\rangle\}\rangle, \{\langle e, \varepsilon\rangle\}\rangle$ in which the anaphoric content still awaits resolution. This DRS is illustrated in Figure 5.4 in box notation.

[24] 'If a new object a is perceived and represented by a marker x then add $\langle x, a\rangle$ to the anchor' (Zeevat, 1999: 292).

[25] Clearly new anchors can conflict with the old ones, which is why one should eventually adopt a more complex mechanism, such as Zeevat's intensional anchors, for example.

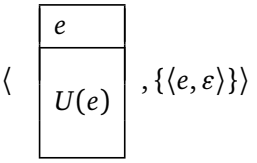

Figure 5.2: Utterance DRS

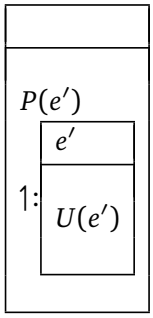

Figure 5.3: Preliminary DRS for *obljubim*

Since A-structure is not empty (it contains the condition $1\ \langle\{e'\},\{U(e')\},\emptyset\rangle$), this is still a preliminary representation. The rules of subordination and accessibility would tell us that the established marker e is accessible to the discourse referent e'. We can now assume that the appropriate algorithm would choose the main DRS as the target site for resolution in terms of binding. Given Definition 4, e' is added to the universe of the utterance DRS and condition $U(e')$ to its conditions. In addition, $e' = e$ is added to the conditions. Thus we obtain DRS $\langle\{e,e'\},\{U(e),P(e'),U(e'),e'=e\},\{1\ \langle\emptyset,\emptyset,\emptyset\rangle\}\rangle,\{\langle e,\varepsilon\rangle\}\rangle$, in Figure 5.5.

We can assume that DRT construction works in such a way that empty DRSs are discarded and redundant information is simplified. We thus obtain DRS $\langle\{\{e\},\{U(e),P(e)\},\emptyset\rangle,\{\langle e,\varepsilon\rangle\}\rangle$, with box notation in Figure 5.6.

This is a proper DRS, which means that we can interpret it according to the rules in Definition 8. Its truth-conditions are straightforward given the earlier definitions:

(33) $\mathcal{M},g \vDash \langle\{\{e\},\{U(e),P(e)\},\emptyset\rangle,\{\langle e,\varepsilon\rangle\}\rangle$ iff there is h such that $g \subseteq_{\{e\}} h$ and $\{\langle e,\varepsilon\rangle\} \subseteq h$ and $h(e) \in \mathcal{I}(U)$ and $h(e) \in \mathcal{I}(P)$

The truth-conditions tell us that the DRS in Figure 5.6 is true in $\mathcal{M}$ given assignment function g iff there is an assignment function h that extends g for the universe of this DRS and it agrees with the anchor, i.e. it maps the referent e onto the actual utterance event, and, roughly, the actual utterance event is an

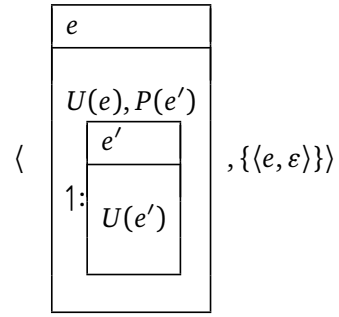

Figure 5.4: Merged Unresolved DRS for *obljubim*

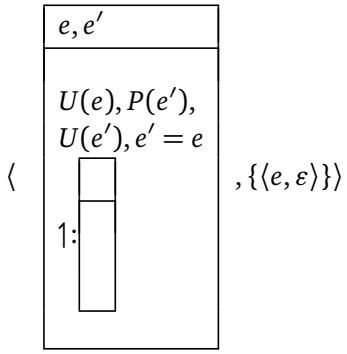

Figure 5.5: Merged Resolved Unsimplified DRS for *obljubim*

utterance and a promise.

I discussed in §4.3.2 why this is sufficient to generate the performative effect. In Condoravdi & Lauer (2011, 2013), for example, the times of the relevant commitments coincide because we have just derived that the promise event *is* the utterance event. In other words, we have derived self-referentiality (that the speaker says of his own utterance that it is a promise) and this is sufficient to guarantee that the performative effect obtains given the public conception of performativity in C&L. One would, of course, need to implement the notion of speaker commitments in this framework (along the lines of Lauer (2013), for example) but this is beyond the scope of this analysis.

5.3.2.2 Slovenian Imperfective Performatives

Consider now the imperfective version of the same sentence:

(34) *Obljubljam*. (I promise$_{\text{IPF}}$)

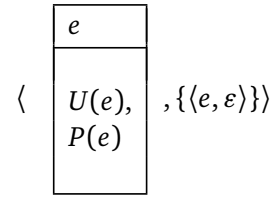

Figure 5.6: Merged Resolved Simplified DRS for *obljubim*

Let us again interpret this sentence against model $\mathscr{M} := \langle \mathscr{D}, \leq, <, \mathscr{I} \rangle$ of $\mathscr{L}_{min}$ and assignment function g and, for simplicity, the empty context. Let us also suppose that the utterance event gets anchored to $\varepsilon \in \mathscr{D}$. The utterance DRS is constructed as above.

Recall that the intensional approach to the Slovenian imperfective presented in the previous chapter involves reference to two events: an event and a less developed version of it (its stage). We used the notion of stagehood in a fairly primitive way, using the symbol $\sqsubseteq$. We saw above that the verb contributes the asserted condition $P(e)$ (that e is a promise event) for the anaphoric event it introduces. Since the toy system is not compositional, it is difficult to imagine how these elements might actually interact with the imperfective (though see §5.4.3 for some discussion outside the toy system). We can, however, discuss what the contribution of the imperfective is with respect to the final result.

In order to derive self-referentiality we need to put in place an extra assumption, related to the workings of the stage relation. We need to assume that taking for granted the existence of an event means taking for granted the existence of its parts. This seems like a reasonable assumption. For example, if somebody speaks of *the couple* (a presupposition in this expression is that there is a couple), it is reasonable to assume that they presuppose the existence of the two entities that constitute it.[26]

Let us therefore assume that the anaphoric nature of a given event is reduplicated onto the event part. This is the minimal step that we can do here without delving into too much speculation.[27] Figure 5.7 illustrates the preliminary DRS

[26] Or, for example, when we speak of *the event of building the bridge*, we presuppose not only that there is one but that there must have been several building stages involved in it.

[27] One might for example want to consider incorporating the stage relation among the non-asserted conditions. It is also open to investigation whether there is an embedding within A-structure, which I do not assume here. In practice, this would mean that one of the two anaphors is resolved first; I return to this point in the following section with the extensional approach to aspect. Lastly, a compositional analysis would need to encode some condition that inserts the stage event and its components into A-structure only when it tries to modify an anaphoric event. These issues should be addressed when spelling out the first stage of the two-stage DRT assumed

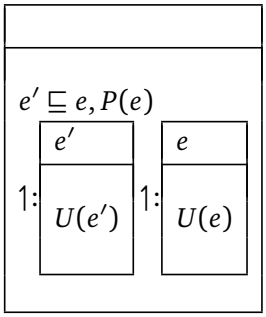

Figure 5.7: Preliminary DRS for *obljubljam*

$\langle \emptyset, \{e' \sqsubseteq e, P(e)\}, \{\, 1\ \langle \{e'\}, \{U(e')\}, \emptyset\rangle,\ 1\ \langle \{e\}, \{U(e)\}, \emptyset\rangle\ \}\rangle$ assumed here.

The merge with the utterance DRS, represented graphically in Figure 5.8, is analogous to the perfective example discussed above.

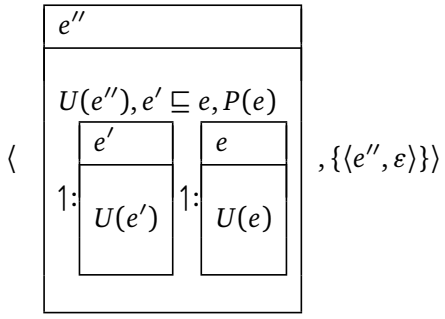

Figure 5.8: Merged Unresolved DRS for *obljubljam*

As before this DRS needs to be resolved, and the established marker e'' is accessible to both e' and e. The preference ranking predicts that both discourse referents prefer to bind to it. Given the definition of binding, we obtain the DRS in Figure 5.9 in box notation.

Notice that this DRS contains a great amount of redundant structure. Removing it as with the previous example results in the DRS represented in Figure 5.10. This DRS is identical to the one obtained with the perfective sentence, hence the same truth-conditions and performativity explanation can apply here. If this approach is on the right track, it explains why there is no intuitive difference between a perfective and an imperfective performative utterance in Slovenian (apart from the hint of formality with the latter, explained away in §3).

here and in van der Sandt (1992).

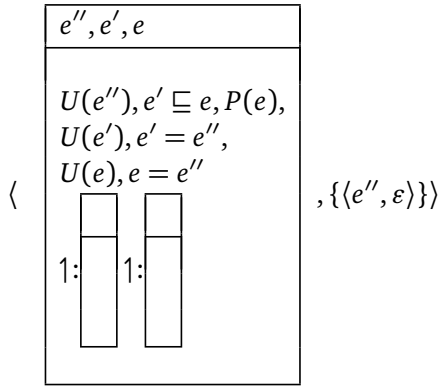

Figure 5.9: Merged Resolved DRS for *obljubljam*

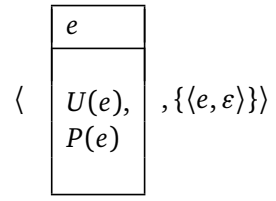

Figure 5.10: Merged Resolved Simplified DRS for *obljubljam*

5.3.2.3 English Progressive Performatives

We can now address the question of why English does not allow for progressive performatives. Recall that the English progressive encodes the strict stagehood relation ($\sqsubset$). This means that a resolution such as the one that applied to Figure 5.9 leads to a contradiction (which means that it is not an admissible resolution). The reason for this is that the following three DRS conditions are incompatible: $e \sqsubset e$ and $e' = e''$ and $e = e''$. Recall that we have specified the semantics of the predicate $\sqsubset$ in terms of the strict part-hood relation, which is irreflexive.

The immediate question is why this should not lead to accommodation. Indeed it must. The question is rather why this is not a perfectly acceptable descriptive sentence. First, since binding is preferred to resolution and the actual utterance event is a salient antecedent, it seems reasonable that one of the two anaphora being bound is preferable to neither being bound. There are then two possible situations and I examine them in turn.

1) Referring to Figure 5.11, consider the situation where e' (the event in progress) is bound to the actual utterance event and e is accommodated. A suitable gloss for this sentence might be *My utterance is a promise in progress*. While this seems like a perfectly reasonable statement, notice that it has already

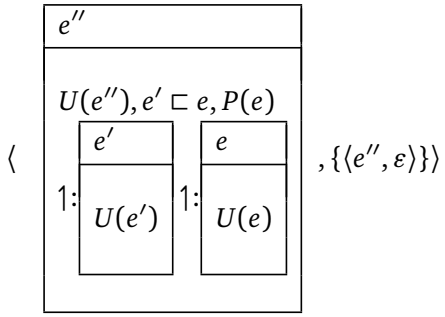

Figure 5.11: Merged Unresolved DRS for *I'm promising*

been observed that the reading does not seem to be available in Slovenian, and perhaps the oddity stems from the same reason. The sentence *I'm promising to come* is in some sense (unless interrupted) a complete event – it is not clear for example in what way a finished sentence could continue to evolve so as to bring about a promise.

Notice that here we loose the initial appeal of the intensional approach. The appeal was that two anaphoric variables will automatically bind to a salient event when this is possible, and this is not possible in English – it leads to a clash. Exploring this further shows that we need to appeal to the assumption that the utterance of a complete sentence is a complete event (to explain a combination of binding and accommodation). This is also a crucial observation for the alternative, extensional approach. With it in place the extensional analysis of the imperfective and the progressive looks in fact much neater in comparison. I discuss it in §5.4.3.

2) Consider now the situation where e is bound to the actual utterance event and e' (the event in progress) is accommodated. Such an utterance conveys, roughly, that there is an utterance event going on now such that it is part of the actual utterance and the whole actual utterance is a promise. It is an interesting question as to why this reading is not available.[28] I suspect that it has to do with the fact that the two anaphors are not on a par in the A-structure after all and that the event part is resolved first, as in the previous case, but compositional investigation would be required to settle this question.

Let us suppose for a moment that a compositional approach prevents the latter

[28] Maria Aloni (p.c.) points out that we could exclude it by adopting the assumption about time made by Condoravdi & Lauer (2011), discussed in §4.3.1. Recall that the latter identifies the temporal extension of e' (the event in progress) with that of the actual utterance event, which means that e cannot be the actual utterance since e temporally extends beyond e' and thus beyond the actual utterance event.

situation. Since binding both referents has been ruled out and binding one of the two referents has also been ruled out, one must resort to the fourth option, which is to accommodate both referents. The utterance would therefore convey that there is a promise in progress and it has nothing to do with the actual utterance event (since we have exhausted all the binding possibilities). Intuitively, this reading does not arise unless the saliency of the utterance event is overridden, e.g. by the presence of another communicative event.[29] As Bach & Harnish (1992: 99) put it: 'If he is ordering me to leave, it must be his utterance that constitutes the order (what else could it be?)'.

5.4 Further Discussion

The previous section put forth a toy system and demonstrated how it can be used to derive the self-referential nature of certain utterances. I wish to conclude the thesis by adding a few comments on this system. I first provide some thoughts on the role of *hereby* and then discuss the other two readings that we set out with in this chapter, in (25) (the self-referential reading was modelled in the previous section). I conclude with a theoretical reflection on the system, drawing a comparison with Eckardt (2012) and discussing the alternative (extensional) approach to aspect.

5.4.1 Note on hereby

Scholars studying explicit performative utterances are often concerned with the role of *hereby*. There are several different ways of how one might want to treat *hereby* in a sentence such as *I hereby promise to come*. I briefly mention a few here.

An intuitive possibility, given the set-up of the toy system, is to understand the deictic role of *hereby* in terms of anchoring. More precisely, the presence of *hereby* signals that the event discourse referent it is associated with should be anchored to the actual utterance event. This is the most direct way of identifying the promise event with the actual utterance, and it comes close to Eckardt's (2012) idea that *hereby* 'replaces' the event variable with the variable representing the actual utterance. I say more about parallels with Eckardt's proposal in §5.4.3.

I note here briefly that one could also understand *hereby* as a resolution strategy shifter, though it is not clear whether this is compositionally feasible. One could see *hereby* as altering the resolution preference order of the event anaphor; the new resolution strategy might be similar to that of *I* or *here*.

[29] Cf. example (11).

In a purely compositional setting, one could follow Condoravdi & Lauer (2013) and take *hereby* to essentially equate the event variable with the relevant communicative event: $[\![hereby]\!]^u = \lambda P \lambda e(P(e) \wedge e = u)$ (Condoravdi & Lauer, 2013: 18). This would of course need to be modified to make it compatible with the system of Champollion (2011). The modification is straightforward and in spirit similar to the changes to be discussed in more detail in §5.4.3.[30]

These possibilities all represent ways in which one can force the event variable to be identified with the actual utterance event more directly. Let me conclude by mentioning that further investigation of English is needed to determine the acceptability of utterances such as *I'm hereby promising to come*. If such utterances turn out to be relatively acceptable, one would need to formalise the semantics of *hereby* in such a way as to for example coerce the lexical entry of the English progressive into one that is compatible with complete events.

5.4.2 Non-Performative Utterances

We began this chapter by drawing a parallel between performative verbs and pronouns. We considered three uses in (25), based on Partee (1973). Let us now discuss the remaining two:

(35) a. *Go to bed.* [Nothing happens ...] *I am ordering you.* (C&L, 2013)
b. *Every time John spoke he promised me something.*

In DRT sentences with universal quantification are sometimes put on a par with conditionals in that they are both represented using the logical symbol of implication, e.g. Kamp & Reyle (1993: 166). Since the toy system already contains implication, let us adopt this approach and take it that the merge of the utterance DRS with the content of the sentence results in the unresolved DRS in Figure 5.12. The discourse referent e'' is externally anchored to ε, which we take to be the utterance of the sentence in (35b).

The reading of the sentence suggests that the anaphoric discourse referent in the consequent is bound locally to the speaking event in the antecedent (this is also the preferred option). We might consider the possibility of binding it globally to the anchored utterance event. In this particular case there is an

[30] Let me briefly provide it here for the sake of completeness. We can modify C&L as follows: $[\![hereby]\!]^u = \lambda M \lambda f[M(\lambda e[u = e \wedge f(e)])]$ of type $\langle vtt, vtt\rangle$ (where v is the type of events and t of truth-values). Recall that the lexical entry assumed by Champollion (2011) is of the following form: $\lambda f \exists e[promise(e) \wedge f(e)]$ of type $\langle vtt\rangle$. The entry of *hereby* would be combined with a lambda expression of the same type. If we combine it simply with the lexical entry, we obtain $\lambda f \exists e[promise(e) \wedge u = e \wedge f(e)]$ of type $\langle vtt\rangle$. To this we can apply a closure operator like $\lambda e.true$, and obtain $\exists e[promise(e) \wedge u = e \wedge true]$, which is simply $\exists e[promise(e) \wedge u = e]$.

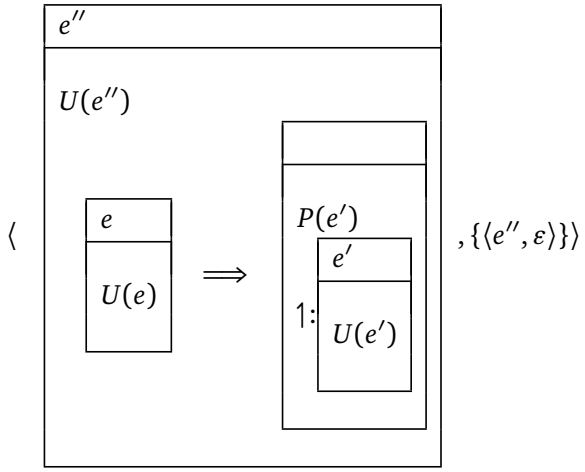

Figure 5.12: Unresolved Merged DRS for (35b)

immediate obstacle, viz. the mismatch in person and tense (not modelled in the toy system, though). This is not to suggest that such a situation could never arise. It might be that conditionals such as *If you come to the party, I promise to pay you* can be read as *I promise that if you come to the party, I will pay you* due to global binding.

Locally binding the anaphoric referent to the utterance in the antecedent, yields a representation whose simplified form is illustrated in Figure 5.13.

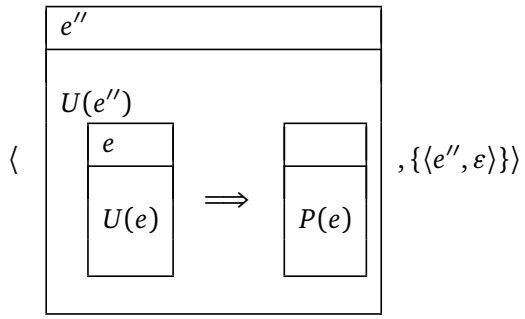

Figure 5.13: Resolved Simplified DRS for (35b)

Let K be the big DRS, K_1 the antecedent DRS, and K_2 the consequent DRS. More precisely, $K := \langle\langle\{e''\}, \{U(e''), K_1 \Rightarrow K_2\}, \emptyset\rangle, \{\langle e'', \varepsilon\rangle\}\rangle$ where $K_1 := \langle\{e\}, \{U(e)\}, \emptyset\rangle$ and $K_2 := \{\emptyset, \{P(e)\}, \emptyset\}$. According to the definitions in §5.3.1, the following truth-conditions obtain:

(36) $\mathcal{M}, g \vDash \langle K, \{\langle e'', \varepsilon\rangle\}\rangle$ iff there is h such that $g \subseteq_{\{e''\}} h$ and $\{\langle e'', \varepsilon\rangle\} \subseteq h$

and $h(e'') \in \mathscr{I}(U)$ and for all f such that $h \subseteq_{\{e\}} f$ and $f(e) \in \mathscr{I}(U)$, there is an i such that $f \subseteq i$ and $i(e) \in \mathscr{I}(P)$

The natural language paraphrase can be rendered as before. The interesting part is the formalisation of the implication. The reason why implication comes close to universal quantification is that we universally quantify over assignment functions. Roughly, for all extensions f such that $f(e) \in \mathscr{I}(U)$ (roughly, the event denoted by e is an utterance), there is an extension i of f that does not differ in the value it assigns to e and that $i(e) \in \mathscr{I}(P)$ (roughly, the event denoted by e is a promise). This corresponds to the intuition that *Every time John spoke he promised me something* conveys that every speaking event by John is a promise event by John.

Let us now turn to example (35a). The example contains a sequence of two utterances: *Go to bed* and *I am ordering you*. The second utterance seems to redescribe the first one as an order and one might paraphrase it using a demonstrative: *That's an order!*. The interesting puzzle about this example is that the English progressive is used to describe an event as complete – the earlier utterance is not described as an order in progress. Recall that the English progressive is typically not compatible with presenting events as complete.

Condoravdi & Lauer (2013) briefly discuss this use of the English progressive, called *interpretative progressive*, to point out that explicit performative sentences in examples like (35a) are not performative utterances because they are used merely to redescribe some previous act. This type of progressive is in fact much broader than its appearance with performative verbs. Martin (2006: 71–79) offers a lengthier discussion of the interpretative progressive and mentions a convincing argument against taking the two sentences as describing the same event twice.[31] The latter means that we cannot hope to use the anaphoric nature of a performative verb to account for these cases because binding results in the identification of the two discourse referents. At the same time this is good news since finding a mechanism that accounts for the interpretative progressive will most likely also offer insights into why the progressive is understood as describing a complete event. Thus the example calls for further investigation of the interpretative progressive, which goes beyond its use with performative verbs.

[31] The argument has to do with the violation of the uniqueness of thematic roles, which is an 'important assumption about event ontology in linguistic literature' (Eckardt, 2012: 32). Eckardt explains:

'If an event e has an agent, then the agent X of e is unique. [...] In many cases, *uniqueness of roles* offers the main argument to distinguish two events. For instance, most linguists would assume that each trade of goods gives rise to an event e_1 of selling and an event e_2 of buying. e_1 and e_2 are distinct because they have different agents.' (Eckardt, 2012: 32)

5.4.3 Extensions and Discussion of Toy System

Let us take a step back and make a quick recap. We observed that an independent account of self-referentiality is sufficient to derive that a self-referential imperfective performative sentence is also a performative utterance, and we have now developed such an account. Our toy system is fairly rudimentary but it serves the purpose of getting the point across. The main point of this chapter is that treating performative verbs as anaphoric expressions and using the system of van der Sandt (1992) can account for their self-referential nature in performative utterances.

The careful reader might observe that external anchors, adopted in the toy system, are not much different from Eckardt's (2012) assignment function, which we initially objected to. Recall that her assignment function maps the promise event variable onto a specific communicative event. There are two important differences to observe. First, external anchors can be (and perhaps should be[32]) replaced by other mechanisms, such as Zeevat's (1999) intensional anchors, Hunter's (2013) pointed models, or Maier's (2009) layered DRT. Second, notice that a performative verb is linked to the actual utterance event only indirectly. External anchors are not used to map the promise event to the actual utterance event, the mechanism of anaphora resolution is used to link the promise event with the utterance's discourse representation, which is in turn externally anchored to the actual utterance event.

Suppose one wanted to surpass the toy system. One should develop a compositional system that integrates or interfaces with a mechanism for anaphora resolution, which must be sensitive to item-specific preferences, and that contains a representation of the utterance and ensures its rigidity. Furthermore, such a system would need to compositionally combine the contribution of the verb (its existential contribution, in particular) with the contribution of aspect. In the rest of the section I want to briefly examine some possibilities.

5.4.3.1 The Intensional Approach

In the thesis we have worked with rudimentary representations of Landman's (1992) intensional approach to aspect. It is important to conclude the thesis by considering whether this approach and the approach of Champollion (2011), which we adopted, at least in spirit, are, at least in principle, compatible.

Let us suppose that *promise* receives the following lexical entry (using only worlds and events) of type $\langle vt, st \rangle$ (v the type of events and s of worlds):

[32] See Maier (2009) for arguments against external anchors.

(37) $\lambda f\, \lambda w \exists e[promise(e,w) \wedge f(e)]$

We implicitly assume a system where lambda abstraction over worlds is closed off at the very end of the derivation, i.e. after the application of a closure operator such as $\lambda e.true$. It is possible to assume a semantics for the imperfective along the following lines, again using only worlds and events:

(38) $\lambda M \lambda f\, \lambda w' \exists e'[f(e') \wedge \exists w.M(\lambda e.e'_{w'} \sqsubseteq e_w)(w)]$

This is of type $\langle\langle vt,st\rangle,\langle vt,st\rangle\rangle$. Combining the two yields the following lambda expression of type $\langle vt,st\rangle$:

(39) $\lambda f\, \lambda w' \exists e'[f(e') \wedge \exists w \exists e[promise(e,w) \wedge e'_{w'} \sqsubseteq e_w]]$

A potential issue (Champollion, p.c.) is that the predicate (here, *promise*) is no longer available for interaction with the imperfective. The reason why this is relevant is that we might need to determine the stagehood relation with respect to it.[33] Given Landman's original proposal, however, it does not seem to me that this is actually needed.[34] Landman mentions that he takes the stagehood relation to be such that 'an event e can be a stage of two events f and g even where f and g are not stages of a common event' (Landman, 1992: 23). In other words, 'an event can *possibly* develop into different events' (*ibid.*). Thus, it does not seem crucial that e is a promise event in order to determine that e' is its stage.[35]

5.4.3.2 The Extensional Approach

Let us now consider the alternative, extensional approach to aspect, e.g. Parsons (1989), and discuss what benefits it offers.

[33] In Altshuler (2014) and Močnik (2014a) we use a complex predicate STAGE. For example, $PROG \rightsquigarrow \lambda P.\lambda e' \exists e \exists w[\text{STAGE}(e',e,w^*,w,P)]$ (Altshuler, 2014: 752). In the case above, $\sqsubseteq$ cannot be defined with respect to *promise*.

[34] Landman's original semantics of the English progressive:

(1) $[\![PROG(e,P)]\!]_{w,g} = 1$ iff $\exists f \exists v : \langle f,v\rangle \in CON(g(e),w)$ and $[\![P]\!]_{v,g}(f) = 1$ (Landman, 1992: 27)

Whether $\langle f,v\rangle \in CON(g(e),w)$ holds can be sloppily glossed as "whether event f in world v is on a continuation branch of event e in world w". The notion of a continuation branch is spelled out with respect to the notion of stagehood and whether it is reasonable for an event to develop into another one. The question then is whether P also plays a role in determining whether $\langle f,v\rangle \in CON(g(e),w)$. Note that Landman does not index this condition with respect to P.

[35] If it did turn out to be crucial or if one wanted to formulate a proposal in which it was crucial, one could try modifying the lexical entry, perhaps along the lines of $\lambda f \exists e[f(promise)(e)]$ used in Močnik (2014b).

The general idea behind such an approach is that the sentence predicates the existence of an event of which the aspectual morpheme specifies (with a special predicate) whether it is complete. For example, something like $\exists e[promise(e) \wedge culminate(e)]$ might say that there is a complete (culminated) promise event. The distinction between the English progressive and the Slovenian imperfective would thus be reflected in the domain of the predicate (such as *culminate*) that the aspectual morpheme encodes. The English progressive would encode a predicate whose domain is the set of incomplete events, whereas the Slovenian imperfective would encode a predicate whose domain is the set of all events (alternatively, it might not specify any such predicate).

The extensional approach to aspect is therefore clearly compatible with Champollion's approach since the aspectual morpheme only modifies the existing variable (which is already what other material in the sentence might do). Let us therefore examine whether it has other advantages.

Champollion (p.c.) notes that his analysis leaves us with a variety of possibilities as to how to close off the abstraction over f that he introduces. Recall that Champollion originally proposes the following verbal semantics:

(40) $[\![\text{rain}]\!] = \lambda f_{\langle v,t\rangle} \exists e[\textbf{rain}(e) \wedge f(e)]$ (Champollion, 2014: 5)

As mentioned earlier (footnote 2 in §5.1), one can apply $\lambda e.true$ at the end of the derivation to close off abstraction over f. Suppose we apply it to $\lambda f \exists e[promise(e) \wedge incomplete(e) \wedge f(e)]$, where the ad hoc predicate *incomplete* is used to signal the contribution of the English progressive. We obtain $\exists e[promise(e) \wedge incomplete(e) \wedge true]$, which is simply $\exists e.promise(e) \wedge incomplete(e)$.

As pointed out by Champollion, this is not the only possibility. One could in principle equate the event with a free variable, in the form of a closure like the following: $\lambda e.e = u$. In this case we obtain $\exists e[promise(e) \wedge incomplete(e) \wedge e = u]$, which is simply $promise(u) \wedge incomplete(u)$. Since the extensional approach to aspect does not introduce an additional event variable that would need to be resolved, one could straightforwardly adopt Champollion's approach and use the latter closure to end up with a free variable for the promise event. One would then only need to supply a mechanism that would determine when this type of closure obtains and how the variable is resolved.

Let us reconsider the case of English progressive performatives from §5.3.2.3. If the mechanism was built along the lines of the preference ranking discussed in §5.2, it would apply the closure operator $\lambda e.e = u$ and try to bind u to the utterance event. This would result in situation (1) from the discussion of the progressive in §5.3.2. We would need the assumption that the utterance event

is somehow complete in order for it to clash with the condition that u is not, cf. $incomplete(u)$. The alternative option is accommodation, which is analogous to simply applying the closure $\lambda e.true$. It is difficult to speculate whether once a closure operator is chosen the situation can be reverted to a different choice. If it can, the same arguments apply as in the accommodation case discussed in §5.2.

We have outlined several advantages of the extensional approach: it is easily combinable with Champollion (2011), closure can be used to mimic the anaphoric effect, and the resolution options – for a mechanism that would still need to be developed – do not pose further difficulties. While the analysis certainly does look more appealing, there are independent issues with the extensional approach (ontological issues, for example) that one would need to reconsider, see Landman (1992) and Zucchi (1999). Nevertheless, I hope to have outlined in this section how the toy system proposed in this chapter can be recast using a slightly different approach to aspect.

Chapter 6

Conclusion

The first part of the thesis presented and discussed Slovenian performative verbs from an aspectual point of view. After a brief introduction to the Slovenian aspectual system (§2), I argued that Slovenian performative verbs do not construct eventualities of the same lexical type (§3.1). I then turned to questions related to grammatical aspect (§3.2). I addressed the claim that perfective forms are not always available in performative utterances (§3.2.1). I used a small corpus study to argue that while some perfective forms might be disappearing from performative uses, others appear to be very much alive. I then discussed the difference in meaning between perfective and imperfective performative utterances (§3.2.2). I argued that the formal connotation of some imperfectives was not associated with any component of the construction, but was due entirely to the distribution of labour in performative utterances.

The second part of the paper was theoretical. After a brief highlight of some of the relevant aspects from the literature (§4.1), I focused on discussing Condoravdi and Lauer's recent conception of performativity (§4.2). I then turned to imperfective performatives (§4.3). I explained how the semantics of the Slovenian imperfective aspect differed from the semantics of the English progressive. The former encodes a non-strict relation between the event in its denotation and the complete event, while the latter encodes a strict one. I proposed this to be responsible for the availability of performative utterances in one but not the other. I showed that this distinction was still insufficient to guarantee the performative effect for Slovenian in C&L's analysis (§4.3.1). Furthermore, I pointed to an implicit assumption in their proposal, which seemed crucial for their account of English perfective performatives. I hope to have shown that it is unreasonable to formulate a theory in which performativity necessarily follows from the logical properties of the performative sentence. Instead, I

argued that one should adopt a two-component analysis where self-reference is independently derived from the performative effect (§4.3.2). I explained why this was still compatible with C&L's conception of performativity in terms of speaker commitments and briefly considered the possibility of extending Eckardt's proposal.

In §5 I put forth a concrete proposal of a mechanism that could account for the self-referential character of performative utterances. I first explained what formal ingredients are needed and how they interact (§5.1). The idea in a nutshell was that performative verbs are essentially anaphoric expressions that can successfully bind to an accessible communicative event, such as the actual utterance event. I discussed their anaphoric properties in §5.2. In §5.3 I put forth a toy system within van der Sandt's two-stage DRT. I provided the technical details (§5.3.1) and showed that, while the system was relatively minimal, it sufficed to derive the self-referential nature of perfective and imperfective performative utterances (§5.3.2). I also discussed what predictions it yielded with respect to the English progressive. I concluded the thesis in by discussing further examples (such as performative sentences with *hereby* and non-performative utterances) as well as possible extensions and modifications of the system (§5.4). In particular, I reflected on the intensional approach to aspect in relation to Champollion's proposal and discussed the possibility of recasting the toy system in an extensional approach to aspect.

Chapter 7

Appendix

7.1 Condoravdi and Lauer (2011, 2013)

Here I provide the full derivation of a promise performative utterance as presented in Condoravdi & Lauer (2011, 2013), using the following notation:

$PB_S[u]$	The set of doxastic commitments of speaker S resulting from communicative event u.
$PEP_S[u]$	The set of preferential commitments of speaker S resulting from communicative event u.
PB_S^t	The set of beliefs of S that become publicly manifest at time t.
PEP_S^t	The set of maximal effective preferences of S that become publicly manifest at time t.

(C&L, 2013: 11)

For promising, the authors assume the following principle of reduction, already discussed in §4.3.1 with (14):

(41) a. $PB(a, PEP(a, p)) \Rightarrow PEP(a, p)$ (C&L, 2013: 11)

b. **Doxastic reduction for preference commitment** If an agent is committed to act as though he believes that he is committed to an effective preference for p, he is also committed to act as though he effectively prefers p (C&L, 2011: 8)

In order to speak about events giving rise to commitments at certain times, the authors assume the following principle, where t_u is the final instant of the runtime of u:

(42) $p \in PEP_S[u] \Leftrightarrow (p \in PEP_S^{t_u}) \in PB_S[u]$ (C&L, 2011: 9)

This principle embodies the intuition that commitments arise at the end of an event. More precisely, the principle says that 'agents are committed to believe the truism that if u brings about a commitment, this commitment comes into effect at the end of the u' (C&L, 2013: 11).

C&L assume the following semantics for *promise*:

(43) $w \vDash promise(u, a, b, p)$ iff

a. u is a communicative event from a to b: $w \vDash CE_{a \to b}(u)$

b. in $c(u)$, u commits a to $PEP_a(p)$: $w \vDash p \in PEP_S[u]$

(C&L, 2011: 11)

Note that this only notationally differs from (16) in §4.3.1. In particular, $PEP_a(p)$ and $PEP(a, p)$ are two alternative notations for the same set of public effective preferences, defined earlier in (13).

Let us now consider the following sentence:

(44) *I promise you to get the tickets.* (C&L, 2011: 11)

C&L's goal is to show that an utterance of a sentence like (44) is self-verifying in the following sense: for any world w, if u is an utterance of (44) in w, then $w \in [\![(44)]\!]_{c(u)}$. Let u^* be the utterance of (44) of speaker S to addressee A in context C^* and world w^*. Let t^* be the last instance of u^*. Given the semantics of *promise*, the proposition expressed by (44) is:

(45) $\{w \mid w \vDash \exists u : \tau(u) = \tau(u^*) \wedge CE_{S \to A}(u) \wedge Tickets \in PEP_S[u]\}$,
where $Tickets = [\![S \text{ will get the tickets}]\!]_{C^*}$ (C&L, 2011: 12)

Since u^* is an assertion, it commits the speaker to act as though he believed in the proposition expressed by it, as discussed in §4.2. In other words:

(46) $w^* \vDash (45) \in PB_S[u^*]$ (C&L, 2011: 12)

The next step one finds in C&L's derivation is crucial:

(47) $w^* \vDash \{w \mid w \vDash Tickets \in PEP_S^{t^*}\} \in PB_S^{t*}$ (C&L, 2011: 12)

The authors take (47) to follow from (46) due to the fact that the temporal intervals of u and u^* are identical – for this reason $PEP_S[u]$ comes about at t^*, which is the last instance of u^*. Clearly, $PB_S[u^*]$ comes about at the last instance of u^*, which is t^*.

Next, the authors state that given the doxastic reduction for preference commitment (47) reduces to (48):

(48) $w^* \vDash Tickets \in PEP_S^{t^*}$ (C&L, 2011: 12)

This seems to be the crucial result that we need – that a promise has been made at t^*, i.e. at the end of utterance u^*.

Two subsequent steps are added by the authors to derive that the utterance event brings about the promise, i.e. that the utterance is a (non-unique) witness to the existential statement. First, (48) and (46) are stated to imply the following:

(49) $w^* \vDash (Tickets \in PEP_S^{t^*}) \in PB_S[u^*]$ (C&L, 2011: 12)

This is then said to be reducible to the following, using the principle in (42):

(50) $w^* \vDash Tickets \in PEP_S[u^*]$ (C&L, 2011: 12)

This gives us that u^* brings about the set of preferential commitments of S in which we can find the proposition that S will get the tickets. Simply put, the relevant promise is brought about by u^*.

7.2 van der Sandt (1992)

I provide here a list of definitions from van der Sandt (1992). Since the author takes A-structure to be a set of DRSs, a small change would need to be introduced to make the definitions compatible with the kind of A-structure proposed in the toy system. I will not do so here but it is straightforward: we would need to replace all occurrences of a DRS K being an element of some A-structure with $\restriction K$ being an element of it (since we implicitly assume that this is the only type of condition that can appear in an A-structure).

Definition 12 (Subordination)**.** *A* DRS K_i *immediately subordinates a* DRS K_j *if one of the following holds:*

(i) There is a K_k *such that* $K_j \rightarrow K_k \in Con(K_i)$
(i) There is a K_k *such that* $K_i \rightarrow K_j \in Con(K_k)$
(iii) There is a K_k *such that* $K_j \rightarrow K_k \in Con(K_i)$
(iv) There is a K_k *such that* $K_k \rightarrow K_j \in Con(K_i)$
(v) $\neg K_j \in Con(K_i)$
(vi) $K_j \in A(K_i)$

A DRS K_i *subordinates a* DRS K_j *just in case*

(i) K_i *immediately subordinates* K_j
(ii) There is a K_k *such that* K_i *subordinates* K_k *and* K_k *subordinates* K_j

(1992: 356)

Definition 13 (Accessibility). *Let $u \in U(K_j)$, where K_j is an element of some A-structure and v an established marker in some $U(K_i)$. Now v is accessible to u just in case K_i subordinates K_j.* (1992: 356)

Definition 14 (Accessible Domain). *Let K be an anaphoric* DRS*, that is, an element of some A-structure. [...] Its accessible domain Acc(K) is the set of all markers which are accessible from the elements of U(K).* (1992: 356)

Definition 15 (Projection Lines). *Let K_0 be a main* DRS *and K_n a member of some A-structure. The projection line of K_n is a sequence of* DRSs *$\langle K_0 \ldots K_n \rangle$ each member of which immediately subordinates the next one. A* DRS *K_j will be said to be lower on K_n's projection line than K_i just in case K_i subordinates K_j. K_j is higher on K_n's projection line than K_i, if K_j subordinates K_i.*

Definition 16 (Resolution: Binding and Accommodation). *Let K be a* DRS *and let K_s be the source of an anaphoric expression, that is an element of an A-structure of some sub-*DRS *of K and let $A(K_s)$ be empty. Let its target be a (sub)*DRS *K_t on K_s's projection line. Let K_s have the markers $y_1 \ldots y_n$ and $Acc(K_t)$ the markers $x_1 \ldots x_n$. Let f be a function from $U(K_s)$ to $Acc(K_t)$, such that the conditions of K_t are compatible with the conditions of K_s under the substitution of $y_1 \ldots y_n$ for $x_1 \ldots x_n$.*

The resolution of the anaphoric structure of K_s with respect to K_t yields a DRS *K', which differs from K in the following respects.*

Binding

(i) $U(K'_s) = CON(K'_s) = \emptyset$

(ii) $U(K'_t) = U(K_s) \cup U(K_t)$

(iii) $CON(K'_t) = CON(K_s) \cup CON(K_t) \cup \{x = y \mid x = f(y)\}$

Accommodation

(i) $U(K'_s) = CON(K'_s) = \emptyset$

(ii) $U(K'_t) = U(K_s) \cup U(K_t)$

(iii) $CON(K'_t) = CON(K_s) \cup CON(K_t)$

(1992: 358)

Definition 17 (Possible Resolutions). *Let K_0 be a* DRS*, K_s an element of the A-structure of some sub-DRS of K_0 and $\langle K_0, \ldots K_s \rangle$ its projection line. Resolution of K_s with respect to some (sub)DRS K_t is subject to the following constraints:*

(i) K_t is on K_s's projection line.

(ii) $A(K_s)$ is empty.

(iii) There is no K_i on K_s's projection line such that $A(K_i)$ is non-empty.

(iv) No condition in K_t contains a variable which occurs free.

(1992: 365)

Definition 18 (Admissible Resolutions)**.** *Let K_0 be the incoming* DRS*, K_1 the merge of a* DRS *with K_0 and K_1' a possible resolution of K_1. The resolution of K_0 to K_1' is subject to the following conditions in order to be admissible:*

(i) K_1' is informative with respect to K_0, that is K_0 does not entail K_1'.

(ii) Resolving K_0 and K_1' maintains consistency.

(iii) Resolving K_0 to K_1' does not give rise to a structure in which

(a) some subordinate DRS *K_i is entailed by the* DRS*s which are superordinate to it,*

(b) $\neg K_i$ is entailed by the DRS*s which are superordinate to it.*

(1992: 367)

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