Focus on Anaphora

Published by
LOT
Janskerkhof 13a
3512 BL Utrecht
The Netherlands

phone: +31 30 253 6006
fax: +31 30 253 6406
e-mail: lot@let.uu.nl
http://www.lotschool.nl

Cover: Illustration by Rania Spatha

ISBN 978-94-6093-045-4
NUR 616

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Focus on Anaphora

Focus op Anaforen

(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor aan de Universiteit Utrecht op gezag van de rector magnificus, prof.dr. J.C. Stoof, ingevolge het besluit van het college voor promoties in het openbaar te verdedigen op dinsdag 23 november 2010 des middags te 12.45 uur.

door

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te Thessaloniki, Griekenland

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Acknowledgements

I wish to thank the following people for their help in completing this dissertation.

I am grateful for every single discussion I have had with Eric Reuland, from our first meeting when I entered the MA program in Linguistics in 2003 to our long-distance debates a couple of days before submitting this dissertation. I have benefited greatly from his broad knowledge of the filed, his specialized knowledge on binding and anaphora, and his contagious energy and optimism.

Tanya Reinhart was and still is a source of inspiration for me, like she is for so many other people in the UiL-OTS and elsewhere, people in linguistics and outside of linguistics. I am grateful for having being taught by her and for having taught with her. I never had the chance to work with her on the work presented here. There is no doubt in my mind that this would have been a very different and much better thesis had this happened.

I thank Elena Anagnostopoulou and Winnie Lechner for being very generous with their time and advice, particularly at some crucial moments in the development of this work. I also want to thank Elena for introducing me to the field during what are some of the most intellectually fascinating classes I have ever attended.

Discussions with Rajesh Bhatt, Cleo Condoravdi, Alexis Dimitriadis, Jakub Dotlačil, Martin Everaert, Kai von Fintel, Gaetano Fiorin, Danny Fox, Nino Grillo, Stella Gryllia, Irene Heim, Sabine Iatridou, Polly Jacobson, Roni Katzir, Marika Lekakou, Emar Maier, Marijana Marelj, Øystein Nilsen, Rick Nouwen, Andreas Pankau, Pritty Patel, Floris Roelofsen, Eddy Ruys, Raj Singh, Bernard Schwarz, Benjamin Spector, Roberta Tedeschi, Craig Thiersch, and Michael Wagner, helped me, directly or indirectly, understand better the issues discussed in this work.

I spent the spring semester of 2008 as a visiting student at the MIT. The result of my time there was a significant change in the direction of my research project. For discussions and help during my stay in Cambridge, I particularly wish to thank Sabine Iatridou, Irene Heim, Roni Katzir, Benjamin Spector, Pritty Patel, Patrick Grosz, and Raj Singh.

Martin Everaert, Maaike Schoorlemmer and all the staff of LOT and UiL-OTS provided everything they had promised to provide at the beginning of my PhD program, and then even more. I am grateful.

I thank all the friends and colleagues who helped me with their judgments. I am

particularly grateful to the non-linguists among them: Vasilis Chatziioanu, Christina-Fraula Karafili, Vivi-Lamia Karafili, Emilios Manolopoulos, Kostas Papadopoulos, Anna Papaioannou, Evgenia Salta, Rania Spatha, and Dimitra Valma.

For non-linguistic help in times of linguistics-related need, I thank Nino Grillo, Kostas Papadopoulos, Emilios Manolopoulos, Eleni Manolopoulou, Kostas Paloukis, Roberta Tedeschi, Jakub Dotlačil, Janneke ter Beek, Gianluca Giorgolo, Clizia Welker, and Nikolaos and Eleni Trichaki.

I thank all my colleagues (in and around Utrecht) for all the fun we had together, especially Ana Aquilar, Linda Badan, Alexis Dimitriadis, Jakub Dotlačil, Gaetano Fiorin, Berit Gehrke, Gianluca Giorgolo (also for printing and sending the mauscript to the reading committee), Nino Grillo, Stella Gryllia, Jutta Hartmannm, Vera Hegedűs, Cem Keskin, Marika Lekakou, Shakuntala Mahanta, Tanja Milićev, Nataša Milićević, Iris Mulders, Øystein Nilsen, Andreas Pankau, Dalan Perangin-Angin, Anca Sevcenco, Roberta Tedeschi, Christina Unger, Anna Volkova, and Stefan Weigand (also for translating the Dutch summary).

I was very lucky that two friends, Gaetano Fiorin and Jakub Dotlačil, were also writing up their dissertations in the luxurious exile of Achter de Dom the same time as I was. They have been great companions walking (part of) the green mile with me.

Kostas Papadopoulos and Emilios Manolopoulos have been putting up with me for many years listening to all my rants about love, politics, life, the universe, and everything, and so they also did while I was working on this dissertation. I thank them both very much.

The last five years of my life would have been so much duller and disoriented if I hadn't met Nino Grillo and Roberta Tedeschi. I thank Roberta for being my friend even though I hate pink and for being the only person that can make me laugh after she has been 35 minutes late. I thank Nino for all 157 explications of Relativized Minimality by the use of beer mats and for being my friend, my shrink, and (this is the highest praise I can give) my favorite cook.

I thank Wieneke Wesseling for giving me a place I could call 'home' and making my stay in the Netherlands so much more worthwhile.

Being a regular Greek son of a regular Greek family, it is literally true that I would never have finished this dissertation without the constant help and support of my family: my mother Toula, my father Nikos, and my sister Rania. Nothing I can say here can match the sacrifices they have made on my behalf. In order to keep my place at the dinner table, however, I do extend my gratitude to Fivos, our dog.

Chapter 1

INTRODUCTION

This dissertation is a study of prosody and anaphora. Its basic aim is to study the syntax and semantics of anaphora by using data from the prosody of sentences with reflexive and pronominal anaphors.

In order to achieve that I first lay out a theory of focus. The main innovation of the focus theory I argue for is that it equates *focus domains* with *cyclic nodes* in the syntactic derivation. This theory is applied on examples with reflexive and pronominal anaphors. In the case of reflexive anaphors it is shown that no analysis that treats them like elements of type *e* can capture their prosodic properties. Instead, the prosody of reflexive anaphors requires that i. the alternatives to a focused reflexive anaphor are argument structure operations rather than individuals, and that ii. reflexive anaphors are semantically functions that take relations as arguments. The second requirement is also shown to apply in the case of pronominal anaphors. Both reflexive and pronominal anaphors, then, are not arguments of verbs like any other DP. Crucially, however, in order to explain their prosodic properties pronominal anaphors do have to share a property with 'full DPs'; like 'full DPs' they have descriptive content. Other descriptive content of pronominal anaphors, however, like *gender*, does not interact with focus. This is shown to reveal something about the interaction of focus values with presupposition, namely that focus values are blind to presuppositional content.

A *focus theory* is a theory of the way information structure (Halliday 1967, Chafe 1974) affects the structure of utterances. In English, the main language of investigation in this dissertation, information structure is primarily reflected in the prosody of utterances. Consider the mini-discourses in (1) and (2). The placement of accent in (1B) and (2B) is affected by the way the utterances are linked to previous discourse, in this case speaker A's utterance. Differences in that lead to differences in prosodic patterns; the prosodic pattern of, e.g., (1B) is felicitous in the context of (1A) but not in the context of (2A).

(1) A: John introduced Bill to Sue.
B: No, John introduced MAX to Sue.
(2) A: John introduced Max to Helen.
B: No, John introduced Max to SUE.

This is the result of the flow of information in discourse and how the information conveyed by different parts of the utterance relates to that. *Max* in (1) is understood to have a different information structural status than the rest of the utterance, it is somehow pragmatically prominent. *Max* is also prosodically the most prominent part of the utterance. Prosodic prominence in English correlates with pitch accent (indicated here with the use of capital letters).

A focus theory, then, should correlate the prosodic properties of an utterance with the information status of its parts. The way such a theory is implemented depends on a major architectural choice. Focus theory should align information from the phonological component with the semantic component of grammar. In a model of grammar that allows those two modules to exchange information directly, focus is not represented syntactically (e.g. Reinhart 2006). In the more standard contemporary models in the generative tradition (e.g. Chomsky 2001), the two modules are prohibited from exchanging information directly; the alignment of information between the two modules, then, is mediated by syntax. Both lines have been pursued in the literature on focus theory. In this dissertation I will assume the later model, although it should be noted that nothing I will say hinges on this choice.

In such a model, *focus* should be defined in syntactic terms. I assume that the syntactic correlate of focus is F-marking (Jackendoff 1972). Syntactic nodes can be freely annotated with a privative syntactic feature F(ocus). For the alignment between phonology and semantics to be successful there should be no syntactic rules that affect the distribution of F-features that is only visible to one of the two interfaces. If so, the aim of focus theory is to define the rules of phonology and interpretation that regulate the distribution of F-features. On the phonology side, focus theory should explain how F-features can be integrated in a general theory of prosody assignment, and how F-marked constituents acquire prosodic prominence.

On the interpretation side, focus theory should define the contribution of F-markers to semantics and how F-marked constituents correlate with pragmatic prominence. Virtually all recent theories that seek to understand the contribution of accent in the semantics of natural language are based on the intuition that focus induces a set of alternatives. Such theories have captured very successfully why the two sentences in (3) have different truth-conditional content when they only differ in the placement of accent within them (Rooth 1985).

(3) a. John only introduced Bill to SUE.
b. John only introduced BILL to Sue.

Roughly speaking, a focus-sensitive operator like the exclusive *only* requires that its complement is true and that every element in the complement's set of alternatives is false. Since the sets of alternatives are computed on the basis of focus, and focus placement in (3a) differs from focus placement in (3b), the two sentences will end up requiring different sets of alternatives to be false; (3a) will require that alternatives of the form *John introduced Bill to x* are false, and (3b) will require that alternatives of the form *John introduced x to Sue* are false. Constituents, then, are not only linked to a regular semantic value, but also to a value sensitive to focus, a *focus value*, and that value can enter the computation of truth-conditional semantics.

Bivalent semantics like the ones just sketched were primarily developed to capture focus-sensitive operators. More recently, focus values have naturally also been used to account for information-structural uses of focus like the ones in (1) and (2) (starting with Rooth 1992). The utterances in (1B) and (2B) share the same truth-conditional content, even if they differ in accent placement. As mentioned before, the most basic intuition is that new information or pragmatic importance is related to acoustic prominence and old information to deaccenting. The advance of formal semantics for focus and the idea that focus is an inducer of alternatives has given rise to a line of research that attempts to define a single information structural notion that regulates the distribution of accent in examples like (1)/ (2) (Schwarzschild 1999). Implementations can differ considerably, of course, but the basic idea is that utterances should be *Given*, where *to be Given* means to have an antecedent that is a member of the set of alternatives of the utterance. Utterances only relate to previous utterances by marking what is old and familiar information by deaccenting. The notion of new information or prominence is only a derivative notion. In the simple case of (1)/ (2), for example, the requirement would be that Speaker A's utterance is a member of the set of alternatives of Speaker B's utterance, in other words, a member of the utterance's focus value. The present investigation locates itself within this line of research; it assumes a bivalent semantics and a unified treatment of information structural focus based on the notion of *Givenness*.

An aspect of focus semantics that has received somewhat limited attention is for which constituents one should built focus values, i.e. which constituents are *focus domains*. In the case of information structural focus as in (1)/ (2) the issue manifests itself in terms of which parts of an utterance should be checked for the relevant information structural notion. With a few notable exceptions (Schwarzschild 1999, Wagner 2005, Büring 2008), the literature has not been explicit about this aspect of a

focus theory. I argue that the domain of evaluation of Givenness should be equated with the syntactic cycle. The principle that achieves that is Cyclic Domains in (4).

(4) *Cyclic Domains*
Cyclic nodes are Given.

Adopting Cyclic Domains has consequences for several aspects of focus theory, among others, the nature of the economy principle that compares competing syntactic structures, the syntax of F-marking etc. Chapter 2 discusses all relevant issues and lays out a specific proposal for a focus theory based on Cyclic Domains.

Focus related phenomena have long been used to investigate the semantics of anaphors. The most obvious case is that of exclusives. (5a) is ambiguous between a reading according to which Zelda went to Zelda's room and no one else went to his or her own room, and a reading according to which Zelda went to Zelda's room and no one else went to Zelda's room. The two readings have been argued to correspond to two possible construals for pronouns (Keenan 1971, and much subsequent work); the first reading is the result of interpreting the pronoun like a bound variable, and the second reading is the result of interpreting the pronoun as a free variable that is resolved to Zelda. (5b) only allows a reading according to which Zelda praised Zelda and no one else praised him- or herself. This has been taken as evidence that reflexive anaphors are obligatorily interpreted like bound variables.

(5) a. Only ZELDA went to her room.
b. Only ZELDA praised herself.

The interaction of anaphors and information-structural focus has received much less attention in that respect, and, then, only for the case of pronominal anaphors (Sauerland 1998, 2006, Jacobson 2000). Chapter 3 of this thesis brings forward the behavior of reflexive anaphors in examples like (6) and (7).

(6) A: Zelda praised Max.
B: No, Zelda praised herSELF.
(7) A: What did Zelda do?
B: She PRAISED herself.

The distribution of stress in such examples is used as the testing ground for three possible theories for the semantics of reflexive anaphors. It is shown that examples like (6), in which the anaphor is focused, require that the alternatives to a focused reflexive anaphor are argument structure operations rather than individuals.

Examples like (7), in which the anaphor obligatorily subordinates to the verb, require that reflexive anaphors are semantically functions rather than individuals. Both requirements are met if reflexive anaphors should be given the semantics of reflexivizing functions, rather than be treated like variables.

Chapter 4 discusses the behavior of bound and referential pronominal anaphors in similar environments, as in (8) and (9). The optionality of focus in (8) requires that bound pronouns have descriptive content, an account already present in the literature. As in the case of reflexive anaphors, obligatory subordination of the anaphor to the verb shows that pronouns are functions that take other functions as arguments

(8) A: Every actor said that Zelda praised him.
B1: No, every DIRECTOR said that Zelda praised him.
B2: No, every DIRECTOR said that Zelda praised HIM.

(9) A: What did every director say that Zelda did?
B: Every director said that Zelda PRAISED him.

In the discussion above, I described the meaning of (5a) using the paraphrase “Zelda went to Zelda’s room and no one else went to his or her own room”. However, a standard presuppositional treatment of gender features on pronouns (Cooper 1983) and a standard treatment of how focus values are compositionally built leads to a reading according to which Zelda went to Zelda’s room and no other female individual went to her own room. Considering (5a) in a context in which the set of alternatives to Zelda contains individuals of both genders reveals that the former reading undergenerates and should be excluded. Facts like this have been taken to reveal something about the syntax of bound variable construals; i.e. that the gender features on bound variables are the result of agreement with the antecedent DP (e.g. Heim 2005). Chapter 5 investigates the interpretability issue of gender features in the case of agreement mismatches in Greek, as in (10). It is shown that the solution of the undergeneration problem in terms of agreement is untenable. Instead, the undergeneration problem is taken to reveal something about focus values; i.e. that they should be blind to presuppositional content.

(10) Mono to koritsi dhiakosmise to dhomatio tis.
only the.neu girl.neu decorated the room her
‘Only our girl decorated her room.’

Let me repeat the structure of what follows. Chapter 2 argues for Cyclic Domains, and builds a focus theory based on this principle. Chapter 3 applies the theory on

data from the prosody of reflexive anaphors. Chapter 4 applies the theory on data from the prosody of pronominal anaphors. Chapter 5 argues, on the basis of the behaviour on gender on pronominal anaphors, that focus values are blind to presuppositional content.

Chapter 2

FOCUS THEORY

This chapter discusses the way Information Structure affects the prosody of utterances. It argues for a theory that adopts the basic results of Schwarzschild (1999), i.e. a theory that (i) utilizes a single information structural notion, that of Givenness, and (ii) requires an Economy Principle to choose between competing focus representations. Contra Schwarzschild, I provide new arguments that (i) not all constituents are focus domains, and (ii) a customized version of Heim's Maximize Presupposition should replace Schwarzschild's economy condition, AvoidF. These results are implemented within Wagner's (2005) recursive system of prosody assignment, after some straightforward modifications. In addition, corrective contexts are used to illustrate the effects of the exhaustification implicatures of focus.

2.1 Introduction

Focus Theory concerns the way *Information Structure* (e.g. Halliday 1967) or *Information Packaging* (Chafe 1974) affects linguistic structure. The effects can be syntactic (word order alternations), morphological (affixes on words), or phonological (intonation and prosodic prominence). Specific effects can be language specific. In this chapter I show how information structure affects the prosody of English.

I adopt the general architecture of Minimalist Generative Grammar (e.g. Chomsky 2001) according to which syntax is an autonomous module that interfaces with the modules of phonological form and meaning. Syntactic phrase markers are spelled-out to the two components and receive their phonological form by rules of phonological realization and their meaning by rules of interpretation. I assume that Information Structure is directly encoded in the syntax by syntactic nodes annotated with a privative syntactic F(ocus)-feature (Jackendoff 1972) and that there are no syntactic rules on F-features that are visible to only one of the two interfaces, i.e. there are no PF and LF rules that manipulate F-features. Focus Theory, then, defines the rules of phonology and interpretation that regulate the distribution of F-features.

In languages like English, in which the realization of informational structural notions is primarily (but not exclusively) manifested on the *prosody* of utterances, the relevant rules of phonological realization affect *prosodic prominence*. Speakers of natural language perceive certain elements in a given domain (sentence, phrase, or word) as acoustically more prominent than others. The corollary of prominence is *pitch accent*, acoustically a maximum or minimum of the fundamental frequency. Focus Theory specifies how rules of phonetic realization relate F-features to pitch accents and which is the domain of such rules.

With regard to rules of interpretation, a focus theory should answer at least the following questions. *Which notions of Information Structure affect the distribution of F-features?* Theories of Information Structure have utilized a very large number of notions, e.g. “new”, “old”, “given”, “prominent”, among many others. Defining these notions has not always been straightforward. Focus theory should specify which of these notions are primitive notions used by rules of interpretation and which (if any) are derivative.

Which parts of an utterance are checked for the relevant properties? Once the relevant notions of information structure have been identified, focus theory should specify which constituents are checked against them, i.e. which constituents are *focus domains*. Are all constituents focus domains, and, if not, how are focus domains to be identified?

What conditions regulate the distribution of F-features? Depending on the answer to the questions above, certain focus theories need to postulate economy conditions that compare alternative syntactic representations. If so, how is the relevant notion to be defined? Is it syntactic or semantic?

This chapter argues for a theory that adopts the basic results of Schwarzschild (1999), i.e. a theory that (i) utilizes a single information structural notion, that of Givenness, and (ii) requires an Economy Principle to choose between competing focus representations. Contra Schwarzschild, I provide new arguments that (i) not all constituents are focus domains, and (ii) a customised version of Heim’s Maximize Presupposition should replace Schwarzschild’s economy condition, AvoidF. These results are implemented within Wagner’s (2005) recursive system of prosody assignment, after some straightforward modifications, a move that results in a focus theory that limits considerably the required descriptive apparatus. In addition, corrective contexts are used to illustrate the effects of the exhaustification implicatures of focus.

The chapter is organized as follows. Section 2 discusses the notions of *New*, *Given*, and *Question-Answer Congruence*, and follows Schwarzschild (1999) in

arguing for a unified theory that only utilizes the notion of *Givenness*. Section 3 identifies two challenges that the theory in section 2 has to face; one concerning the mapping from syntax to phonology, the second concerning apparent violations of Givenness. Section 4 presents and modifies Wagner's (2005) recursive system of prosodic structure, accommodating the challenges above. Section 5 discusses the effects of the exhaustification implicatures of focus. Section 6 compares the resulting system with some of its competitors. Section 7 concludes.

2.2 Givenness

The discussion about which notions of Information Structure are operative in the distribution of F-features has mainly revolved around the distinction between *new* and *old*/ *given*, and the contribution of *Question-Answer Congruence* (QAC). In this section, I follow Schwarzschild (1999) (cf. Rochemont 1986) in arguing that *Givenness*, properly defined, is the only primitive notion operative in focus theory and that effects of *novelty* are only derivative. *Givenness* can subsume a number of different uses of foci including focus in Question-Answer pairs.[1]

2.2.1 Conditions

The most prominent intuition about the effects of *new* and *given* is that prominence indicates novelty and lack of it indicates givenness as stated in (1) (adopted from Schwarzschild (1999, 142)).

(1) a. Lack of prominence indicates givenness.
b. Prominence indicates novelty.

So, in, e.g, (2), *Helen* in B's response is accented since it constitutes new information, but *Bill* is not since it is already mentioned in A's utterance; it constitutes given information.[2,3,4] Keeping with our assumption that focus theory is directly

[1] In this section, I follow loosely the discussion in Schwarzschild (1999, 142-147). The basic difference is that the discussion in Schwarzschild adopts Selkirk's (1996) Projection Rules. See section 2.6.1 for discussion.

[2] All the examples in this chapter are structured like example (2); they all constitute mini-discourses in which the target sentence is B's utterance and the relevant preceding discourse is

encoded in the syntax through the use of F-features, it can be assumed that the syntactic correlate of new information is F-marking. This gives rise to the syntactic representation in (3).

(2) A: John introduced Mary to Bill.
B: No, he introduced HELEN to Bill.
(3) He introduced $[_{DP}$ Helen$]_F$ to Bill

On the phonological side, F-marking correlates with the assignment of pitch accents to words. So, F-marking is read off by the PF component and realized in the form of a pitch accent. This is achieved with the rule in (4).

(4) *F-to-Accent Mapping*
F-marked terminal nodes receive pitch-accents.

The requirement in (5) (cf. Schwarzschild (1999, 155)) is one of the possible ways to enforce the correlation between F-marking and new information.[5] This requirement checks every F-marked constituent in a sentence for novelty. The syntactic representation in (3) conforms to (5), so it is predicted to be felicitous, as it is.

---

limited to A's utterance. For cases with more possible choices for antecedents and discussion of how antecedents are picked, see sections 2.5 and 2.6.1.3. The prosody of A's utterance does not usually affect the prosody of B's utterance and it will not be indicated.

[3] Corrective contexts as in (2) sharpen speaker's judgements. I use such corrective contexts as much as possible. For reasons of coherence I also modify well-known examples from the literature into corrective contexts as long as this does not affect the judgement. For issues that arise specifically for corrective contexts, see sections 2.5.3 and 2.6.1.3.

[4] Capital letters indicate (relevant) pitch accents. In case of more than one (relevant) pitch accents, the most prominent accent is indicated with capitals, and less prominent accents with small caps.

[5] I take it that *new*, *given*, and all information structural notions discussed here, are properties of expressions, and not of meanings/ denotations. So it is the DP *Helen* that is *new* in (2), not the individual Helen it refers to. This is compatible with having the definition of *new* or *given* refer to the meaning of an expression. In fact, in all the examples I discuss in this chapter, the contrast is between denotations rather than expressions. I put aside cases where stress is used to contrast different expressions, as in, e.g., (i) (Krifka (2006, 8)). See Artstein (2003) for relevant discussion and an attempt for unification in Alternative Semantics.

(i) A: They live in BERlin.
B: No, they live in BerLIN.

(5) *New Domains*
If a constituent is F-marked, it must be new.

New Domains also correctly predicts that focusing material that is not new, will lead to infelicity. This is the case in (6). (6A) would correspond to the syntactic representation in (7). (5) would rule (7) out, since *Bill* is not new.

(6) A: John introduced Mary to Bill.
B: No, he introduced HELEN to BILL. #
(7) He introduced $[_{DP}$ Helen$]_F$ to $[_{DP}$ Bill$]_F$

The principle encounters two problems. The first problem arises because it says nothing about non-F-marked constituents. Consider the example in (8). Novelty correctly allows *Peter* to be F-marked. At the same time, however, it allows *Helen* not to be. New Domains cannot capture the fact that new information in (8) is focused obligatorily.

(8) A: John introduced Mary to Bill.
B1: No, PETER introduced Helen to Bill. #
B2: No, PETER introduced HELEN to Bill.

A solution to such cases of 'underfocusing' could be to adopt the *Given Domains* condition in (9), from Schwarzschild (1999, 155), next to (5).[6] (9) will now correctly rule out (8B1), since *Helen* is not F-marked, but is still new.

(9) *Given Domains*
If a constituent is not F-marked, it must be given.

Adopting *Given Domains*, however, cannot solve a second problem that arises by adopting *New Domains*. New Domains requires that all F-marked constituents are new. Examples like (10) show that this is not always the case. *Helen* in (10B) is old information, but still F-marked (and, hence, accented).

(10) A: Who did Helen's mother introduce to Bill?
B: She introduced HELEN to Bill.

[6] Schwarzschild calls the condition in (9) *Givenness*. This can lead to some terminological confusion. I will use *Givenness* to define the property of being *Given*, and rename principles like (9). This is important since (9) not only specifies the relevant information structural notion, but also defines focus domains. Defining the relevant information structural notion and determining where it applies are connected but separate issues and I will try to keep them apart.

Examples of this kind that involve Question-Answer pairs have led a number of researchers to postulate an additional principle governing F-marking (e.g. Haliday 1976, Selkirk 1996, among others), like the one in (11). This is the version in Selkirk (1996)/ Schwarzschild (1999), a syntactic version of more familiar semantic notions of Q-A Congruence. Adopting QAC in (11) forces F-marking on *Helen* in (10B). If, in addition, it is assumed that QAC overrides New Domains, i.e. that constituents F-marked to satisfy QAC do not have to be new, (10B) is predicted to be felicitous.

(11) *Question-Answer Congruence (QAC)*
An appropriate answer to a wh-question must have F-marking on the constituent corresponding to the wh-phrase.

The effect is not restricted to Question-Answer pairs, however. The example in (12) also exhibits a given constituent being F-marked. In contrast with (10), where QAC forces F-marking on *Helen*, nothing forces the same in (12). Moreover, there is locally no way to decide whether *Helen* should be F-marked or not; F-marking *Helen* results in a violation of New Domains, and not F-marking it results in a violation of Given Domains.

(12) A: Helen's mother introduced Mary to Bill.
B: No, she introduced HELEN to Bill.

Since (10)/ (12) constitute prima facie counterexamples to New Domains, one could drop (5) altogether. This would leave us with Given Domains being the only constraint on F-marking for, e.g., (12). Indeed, Given Domains is consistent with given material being F-marked. But the basic problem with (12) remains; nothing forces *Helen* to be F-marked. Other possible markings, like, e.g., the one in (13), are predicted to be equally available; there is no violation of Given Domains in (13).

(13) B: No, she INTRODUCED Helen to Bill. #

As Schwarzschild points out, what all the felicitous examples have in common is that the deaccented string in B's utterances are already present in A's utterances. What is needed, then, is a definition of Givenness that is flexible enough to evaluate strings that are not constituents, like, e.g., *He introduced [ ] to Bill* for (2), or *she introduced [ ] to Bill* for (12).

2.2.2 To be *Given*

In the discussion so far, I have assumed a loose definition of what it means to be *Given*. Since I only discussed referential DPs, to be given was equated with the notion of *familiar discourse referent* used in the literature on definiteness. This notion can not be applied to constituents of other categories, like, e.g., verbs and verb phrases. As Büring (2007) points out, if the relevant notion is to be understood as a notion of information management, it should be a *propositional* notion; sentences and the propositions they express can be informative, but parts of sentences cannot. To be *Given*, then, should be equated with being uninformative, in other words with being entailed by prior discourse.

Schwarzschild's definition of *Givenness* in (3) tackles this issue by introducing a type-shifting operation that raises expressions to type *t* by existentially binding unfilled arguments. Take for example the case of (1) and the list of its constituents in (2). With the exception of (2a), no other constituent is of the right type to check entailment relations with the potential antecedents in (1A). In the case of a verb that denotes a transitive relation, as, e.g., *λxλy. called (x)(y)*, in (2c), existential type-shifting will existentially close its two arguments, turning the relation into a proposition, *∃x∃y.called (x)(y)*. In the same vein, the result of existential type-shifting in (2b) will be *∃x.called (Helen's mother)(x)* and that in (2e) will be *∃x.mother(x)*.[7]

(1) A: John called Helen's mother.
B: No, BILL called Helen's mother.

(2) a. [$_{IP}$ Bill$_F$ called Helen's mother]
b. [$_{VP}$ called Helen's mother]
c. [$_V$ called]
d. [$_{DP}$ Helen's mother]
e. [$_{NP}$ mother]
f. [$_{DP}$ Helen]

(3) *Givenness*
An utterance U is *given* iff it has an antecedent A and A entails U, modulo ∃-type shifting.

The two referential DPs in (2d) and (2f) have no open arguments, so there can be no meaningful application of existential type-shifting on them. The definition of *Givenness* requires the addition of one more clause, as in (4).

[7] Notice that the definition in (3) also allows that *parts* of prior discourse can be antecedents for Givenness licensing,

(4) *Givenness*
An utterance U counts as *Given* iff it has a salient antecedent A and
a. if U is of type e, then A and U corefer.
b. otherwise: A entails U, modulo ∃-type shifting.

The definition in (4) still doesn't cover (2a). Remember that the definition should be able to check the status of non-constituents. In the case of (2a), this will be the string *called Helen's mother*. This is achieved by, first, replacing F-marked constituents with variables of the same type; in the case of (2a) this will be a variable of type e. The result is *x called Helen's mother*, what is usually called in the literature the 'presuppositional skeleton'. The second step is to assume an existential quantifier binding F-variables.[8] For (2a), the result of applying the quantifier is *∃x.x called Helen's mother*. Schwarzschild defines this procedure as in (5).

(5) *Existential F-closure of U*
The result of replacing F-marked phrases in U with variables and existentially closing the result, modulo existential type-shifting.

The definition of *Givenness* is finalized in (6).

(6) *Givenness*
An utterance U counts as *Given* iff it has a salient antecedent A and
a. if U is of type e, then A and U corefer.
b. otherwise: A entails the Existential F-closure of U, modulo ∃-type shifting.

If the definition of *Givenness* in (6) is coupled with the requirement for *Given Domains* repeated in (7), the distribution of F-marking in all the examples discussed so far is predicted correctly.

(7) *Given Domains*
If a constituent is not F-marked, it must be Given.

I start, first, with the pattern in (2.2.1.8), repeated in (8). (9) shows all the relevant constituents of (8B2), and their Existential F-closures. As shown in (10), (8A) entails all the existential F-closures in (9a)-(9d). Moreover, *Bill* in (8B2) is coreferent with *Bill* in (8A). All the constituents in (8B2), then, count as *Given*, in accordance with Given

[8] The formal system Schwarzschild adopts is based on Kratzer (1991). There the existential quantifier is dispensed with. The open proposition is interpreted relative to a second assignment function, *h*, that assigns values to F-variables.

Domains.

(8) A: John introduced Mary to Bill.
B1: No, PETER introduced Helen to Bill. #
B2: No, PETER introduced HELEN to Bill.

(9)	Constituent	Existential F-closure	Given
a.	[$_{IP}$ Peter$_F$ introduced Helen$_F$ to Bill]	∃x∃y. introduced(x)(Bill)(y)	✓
b.	[$_{VP}$ introduced Helen$_F$ to Bill]	∃x∃y. introduced(x)(Bill)(y)	✓
c.	[$_{VP}$ introduced Helen$_F$]	∃x∃y∃z. introduced(x)(y)(z)	✓
d.	[$_{V}$ introduced]	∃x∃y∃z. introduced(x)(y)(z)	✓
e.	[$_{DP}$ Bill]		✓

(10) John introduced Mary to Bill → *∃x∃y. introduced(x)(Bill)(y)*
John introduced Mary to Bill → ∃x∃y. introduced(x)(Bill)(y)
John introduced Mary to Bill → ∃x∃y∃z. introduced(x)(y)(z)
John introduced Mary to Bill → ∃x∃y∃z. introduced(x)(y)(z)

Consider now what happens in case one of the F-marked constituents in (8B2) is stripped from its F-marker. This is shown in (8B1) for *Helen*. This has effects not only for *[$_{DP}$ Helen]* itself, but for all the constituents dominating it, as can be seen in (11). *Helen* itself is not *Given* since there is no antecedent in (8A) that it corefers with. But violations of Given Domains multiply, since the Existential F-Closures of (11a)-(11c) are now not entailed by (8A), as shown in (12). (8B1) is, thus, predicted to be infelicitous.

(11)	Constituent	Existential F-closure	Given
a.	[$_{IP}$ Peter$_F$ introduced Helen to Bill]	∃x. introduced(Helen)(Bill)(x)	*
b.	[$_{VP}$ introduced Helen to Bill]	∃x. introduced(Helen)(Bill)(x)	*
c.	[$_{VP}$ introduced Helen]	∃x∃y. introduced(Helen)(x)(y)	*
d.	[$_{V}$ introduced]	∃x∃y∃z. introduced(x)(y)(z)	✓
e.	[$_{DP}$ Helen]		*
f.	[$_{DP}$ Bill]		✓

(12) John introduced Mary to Bill ↛ *∃y. introduced(Helen)(Bill)(y)*
John introduced Mary to Bill ↛ *∃y. introduced(Helen)(Bill)(y)*
John introduced Mary to Bill ↛ *∃y∃z. introduced(Helen)(y)(z)*
John introduced Mary to Bill → *∃x∃y∃z. introduced(x)(y)(z)*

What the example in (8) shows is that any new material that will be left without an F-marker will lead to violations of Given Domains. Hence the impression that new material is tied to prominence.

What needs to be shown next is that the theory can also capture the cases where given material is F-marked. The relevant example is repeated here in (13).

(13)			
	A:	Helen's mother introduced Mary to Bill.	
	B1:	No, PETER introduced Helen to Bill.	#
	B2:	No, PETER introduced HELEN to Bill.	

The first thing to note is that all the constituents of (13B2) are Given (except *Peter* who is therefore F-marked). This is shown in the table in (14). So, Given Domains is respected and (13B2) is correctly predicted to be felicitous.

(14)	Constituent	Existential F-closure	Given
a.	[$_{IP}$ Peter$_F$ introduced Helen$_F$ to Bill]	∃x∃y. introduced(x)(Bill)(y)	✓
b.	[$_{VP}$ introduced Helen$_F$ to Bill]	∃x∃y. introduced(x)(Bill)(y)	✓
c.	[$_{VP}$ introduced Helen$_F$]	∃x∃y∃z. introduced(x)(y)(z)	✓
d.	[$_{V}$ introduced]	∃x∃y∃z. introduced(x)(y)(z)	✓
e.	[$_{DP}$ Bill]		✓

F-marking *Helen*, however, is not only possible, but obligatory. This is so, even though leaving *Helen* without F-marking produces no local violation of Given Domains; *Helen* will still be *Given*, since it will be coreferent with *Helen* in (13A). As can be seen in the table in (15), however, deaccenting *Helen* produces violations of Given Domains for all the constituents dominating it. The theory correctly predicts, then, that (13B1) will be infelicitous.

(15)	Constituent	Existential F-closure	Given
a.	[$_{IP}$ Peter$_F$ introduced Helen to Bill]	∃x. introduced(Helen)(Bill)(x)	*
b.	[$_{VP}$ introduced Helen to Bill]	∃x. introduced(Helen)(Bill)(x)	*
c.	[$_{VP}$ introduced Helen]	∃x∃y. introduced(Helen)(x)(y)	*
d.	[$_{V}$ introduced]	∃x∃y∃z. introduced(x)(y)(z)	✓
e.	[$_{DP}$ Helen]		✓
f.	[$_{DP}$ Bill]		✓

In the previous section I also discussed a variant of examples with focus material

that is given, that contained Question-Answer pairs, rather than corrections. The relevant example is repeated in (16). As before, focusing *Helen* is not only possible, but obligatory.

(16) A: Who did Helen's mother introduce to Bill?
B: She introduced HELEN to Bill.

Schwarzschild's theory promises to capture the facts about question-answer pairs without the use of any special condition like Question-Answer Congruence. The intuition behind this was that the deaccented string in (16B) is present in the antecedent, just like in, e.g., (13B2). Having introduced the mechanism of Existential F-closure, it is now possible to check whether these strings, that are actually not constituents, are Given. This is exactly what was done in the case of (13) above. The question is whether the same can be done in the case of (16). If yes, the obligatoriness of accenting *Helen* in (16B) would be explained in the same way as in (13); leaving *Helen* unaccented would lead to violations of Given Domains for constituents containing it.

The only obstacle to doing just that is that interrogatives do not have the type of propositions, so it is not possible to check entailment relations. In Hamblin's (1971) and Kartunnen's (1977) analyses, questions denote sets of propositions, those propositions that are possible answers to the question (true answers in Kartunnen's analysis). Schwarzschild's response is the same as with the other cases of non-propositional types. Like those, questions too will be type-shifted to denote propositions. Schwarzschild shows how applying existential type-shifting to question meanings can turn them into propositions. In the general case, the result is the following, in (17) (Schwarzschild 1999, 157).

(17) The existential closure of an interrogative of the form Wh_i $[_{CP} \ldots t_i \ldots]$ is roughly $\exists x_i$ $[_{CP'} \ldots x_i \ldots]$.

For (16A), the result will be the proposition that *Helen's mother introduced someone to Bill*. It can now be checked whether the constituents in (18) are Given or not. They are, indeed, Given, since *Helen's mother introduced someone to Bill* entails all the Existential F-closures in (18). Moreover, as in the case of (13), leaving *Helen* without F-marking would lead to violations of Given Domains, as, e.g., *Helen's mother introduced someone to Bill* does not entail that *someone introduced Helen to Bill*. It is correctly predicted, then, that F-marking *Helen* will be obligatory, without the need to postulate a special Question-Answer Congruence condition.

(18)	Constituent	Existential F-closure	Given
a.	[$_{IP}$ Helen's mother introduced Helen$_F$ to Bill]	∃x. introduced(x)(Bill)(Helen's mother)	✓
b.	[$_{VP}$ introduced Helen$_F$ to Bill]	∃x∃y. introduced(x)(Bill)(y)	✓
c.	[$_{VP}$ introduced Helen$_F$]	∃x∃y∃z. introduced(x)(y)(z)	✓
d.	[$_{V}$ introduced]	∃x∃y∃z. introduced(x)(y)(z)	✓
e.	[$_{DP}$ Helen$_F$]		✓
f.	[$_{DP}$ Bill]		✓

F-marking, in the theory, is used in order to avoid violations of Given Domains, even if it is violations of constituents other than the focused element itself. Notice, however, that nothing in the theory so far regulates how much F-marking is to be used in order to do so. Consider a third alternative response to (13A), the one in (19B). Prominence on *Bill* indicates that it is F-marked. As shown in (20), focusing *Bill* leads to no violation of Given Domains; *Helen's mother introduced Mary to Bill* entails that *someone introduced someone to someone*. Yet, the response in (19B) is infelicitous. A third component in the theory is necessary that will rule out such cases of *overfocusing*.

(19) A: Helen's mother introduced Mary to Bill.
B: No, PETER introduced HELEN to BILL. #

(20)	Constituent	Existential F-closure	Given
a.	[$_{IP}$ Peter$_F$ introduced Helen$_F$ to Bill$_F$]	∃x∃y∃z. introduced(x)(y)(z)	✓
b.	[$_{VP}$ introduced Helen$_F$ to Bill$_F$]	∃x∃y∃z. introduced(x)(y)(z)	✓
c.	[$_{VP}$ introduced Helen$_F$]	∃x∃y∃z. introduced(x)(y)(z)	✓
d.	[$_{V}$ introduced]	∃x∃y∃z. introduced(x)(y)(z)	✓
e.	[$_{DP}$ Helen$_F$]		✓
f.	[$_{DP}$ Bill$_F$]		✓

To achieve that, Schwarzschild proposes the *economy principle* in (21). *AvoidF* is a global syntactic condition that compares different syntactic representations and favors the one with the fewer F-markers. Crucially, it only compares representations that satisfy Given Domains. (19B), then, is infelicitous not because of some violation of Given Domains, but because it loses out to (13B2); (19B) has three F-marked constituents, while (13B2) only has two.

(21) *AvoidF*
F-mark as little as possible, without violating Given Domains.

2.3 Challenges

2.3.1 F-to-accent

So far, I have been assuming a single phonological rule to regulate accent placement, F-to-accent in (1). Since F-marking is determined by Given Domains, I have essentially been assuming that accent placement is determined by pragmatic factors only. This section presents two problems for this assumption.

The simplified rule in (1) only looks at terminal nodes and assigns pitch accents to the ones that are F-marked.

(1) *F-to-accent Mapping*
F-marked terminal nodes receive pitch-accents.

The rule correctly predicts that in, e.g., (2B), *Bill* will be the only element that will bear a pitch accent and that the string following it will be deaccented. The focus representation of (2B) in (3) contains the minimum F-marking in order to satisfy Given Domains. *Bill*, will, then, be the only terminal node receiving a pitch accent, so it will be the most prominent element in the string.

(2) A: Who did John call?
B: He called BILL.
(3) John called $[_{DP}$ Bill$]_F$

The rule in (1) is inadequate for cases of constituents that contain only new elements.[9] This is the case of the VP in (4). Given Domains requires that the VP and all its constituents are F-marked, forcing the syntactic representation in (5). According to (1) the F-features on *called* and *Bill* will be the only ones relevant for stress assignment. (1) predicts that both *called* and *Bill* will be assigned a pitch accent. This is, indeed, so as indicated by the use of capitals in (4B). Moreover, since native speakers of English perceive the last of a series of pitch accents to be the

[9] Notice that this is not a problem for Schwarzschild (1999), but only for the simplified F-to-accent rule assumed here.

most prominent one, *Bill* will be perceived to be the most prominent element in the sentence.[10] This is indicated in (4B).

(4) A: What did John do?
B: He CALLED BILL.
(5) He $[_{VP}\ [_{V}$ called$]_{F}\ [_{DP}$ Bill$]_{F}]_{F}$

As Wagner (2005) notes, however, (4B) is not the only possible stress pattern. One resembling (2B) is also possible, as shown in (6). (1) is inadequate to explain the pattern in (6B). It seems that either (1) will have to be dropped, or the assumption that (5) is the correct syntactic representation for (6B) will have to be dropped.

(6) A: What did John do?
B: He called BILL.

A second problem with (1) is exemplified by cases where F-marked constituents only contain elements that are Given. Consider the example in (7). Given Domains requires that the VP *called Bill* will be F-marked; it is the only way for the whole sentence to be Given. Moreover, Economy will disallow F-marking of either *called* and *Bill*, since they are both Given. The syntactic representation of (7B), then, is the one in (8).

(7) A: Mary asked Helen to call Bill. What did John do?
B: He called BILL.
(8) He $[_{VP}$ called Bill$]_{F}$

Schwarzschild (1999, 171) already points out that the prosody of all-given-constituents poses a challenge for theories that correlate accent placement with F-marking only. Additional rules are required, that do not make reference to pragmatic factors. Moreover, (7B) seems to be compatible with the pattern in (4B) too. This is shown in (9).

(9) A: What did John do?
B: He CALLED BILL.

In other words, the stress pattern of constituents that contain all-new and all-given elements is the same. Still, the generalization behind (1) seems to be very robust and it is desirable that it is somehow kept as part of the system. I will argue in section 2.4

[10] See section 2.4.2.1 for more discussion of this point.

that the best way to unify the behavior of (4B)/ (6B) with that of (7B)/ (9B), is to drop the assumption that (5) is the syntactic representation of (4B)/ (6B). If the syntactic representation of all (4B)/ (6B) and (7B)/ (9B) is the one in (8), then it is possible to show that whatever explains the stress pattern of all-given constituents, also explains the stress patter of all-new ones. Crucially, it will be shown that this move is incompatible with Given Domains.

2.3.2 Domains of focus

Schwarzschild's system, as shown it in the previous section, correctly allows Given material to be F-marked, explaining examples like (10) in section 2.2.1. This is so because Given Domains poses no restrictions on F-marked nodes and the generalization in (1b) in 2.2.1 that prominence indicates novelty is correctly predicted to be wrong. Schwarzschild's system, however, still predicts the reverse of this generalization to be true. So, even though (1b) in 2.2.1 is wrong, (10) is predicted to hold.

(10) Novelty indicates F-marking/ prominence.

What (10) says is that constituents that are not Given should necessarily be F-marked. Although this is not a primitive of the theory it immediately follows from Given Domains. Simply put, any constituent that is new and is left without F-marking will lead to violations of Given Domains for that constituent itself and also for all constituents dominating it. To illustrate, consider the simple example in (11).

(11) A: John praised Mary.
B1: No, Bill praised HELEN. #
B2: No, BILL praised HELEN.

Leaving *Bill* with no F-marking, as in (11B1) leads to violation of Given Domains for *[$_{DP}$ Bill]*, *[$_{S}$ Bill praised Helen]*, since their respective Existential F-Closures (*Helen*, and *Bill praised someone*, respectively) are not entailed by *John praised Mary*. *[$_{DP}$ Helen]*, and *[$_{VP}$ praised Helen]* are Given, since their Existential F-closures are entailed by A's utterance. So, although there are constituents that are *Given*, (11B1) is still infelicitous. This is so because Given Domains, as stated, requires that *all* non-F-marked constituents should be Given. In other words, all constituents are *focus domains*, i.e. domains for which the pragmatic felicity condition should be checked. In this section I will present a new argument against this position. The argument will rest

on the existence of an argument against the generalization in (10).

2.3.2.1 Krifka's (2006) only-child-problem

The focus theory I have been presenting and developing so far is only concerned with issues of pragmatic felicity, specifically with the contribution of information structure on prosodic prominence. A second major issue tackled by theories of focus is the phenomenon whereby the meaning of sentences containing certain operators depends on the stress pattern of those sentences. The phenomenon has been dubbed *association with focus*. Contrary to the examples I have been discussing, association with focus describes cases where prosody affects the truth-conditional meaning of utterances. Consider, first, the examples in (12) and (13). Whatever the conditions are that make (12B) felicitous in the context of (12A) (and not in the context of (13A)) and (13B) felicitous in the context of (13A) (and not in the context of (12A)), both (12B) and (13B) arguably contribute the same meaning, i.e. the proposition that John introduced Bill to Sue.

(12) A: John introduced Peter to Sue.
B: No, he introduced BILL to Sue.
(13) A: John introduced Bill to Helen.
B: No, he introduced Bill to SUE.

Compare now the situation with the sentences in (14) and (15). These sentences contain the prototypical focus-sensitive operator *only*. They only differ in that the most prominent accent in (14) falls on *Bill*, whereas the most prominent accent in (15) falls on *Sue*. To see that (14) and (15) have different truth-conditional content, consider, first, a context where John introduced Bill to Sue and Mary and no other introductions were done. In this context (14) is true but (15) is false. In a context, however, where John introduced Bill and Peter to Sue and no other introductions were done, (14) is false but (15) is true.

(14) John only introduced BILL to Sue.
(15) John only introduced Bill to SUE.

Theories of focus seek to give compositional treatments of association with focus. Association with focus is usually explained by making use of a two-dimensional semantics, where, apart from their ordinary meaning, expressions are associated with a focus meaning. Existential F-Closures are such meanings. In Rooth's (1992) Alternative Semantics framework focus values are built based on the

presuppositional skeleton, like Existential F-Closures, but define sets rather than propositions. Roughly speaking, the focus value is the set of propositions that fit the presuppositional skeleton; they are sets of elements of the same type as the ordinary meaning that are obtained by making a substitution in the place of the focused phrase. So, the focus value of, e.g., (14), is the one in (16). Since focus values and existential F-Closures are both built on the basis of the presuppositional skeleton, it is not difficult to define the same set in the Schwarzschildian system used here. It is enough for present purposes to use the set in (17). The set in (17) is the set of propositions that entail the Existential F-Closure of the sentence.

(16) { John introduced x to Sue | $x \in D_e$ }
(17) { p | p → ExFClo(John introduced $Bill_F$ to Sue) }

Focus-sensitive operators like *only* are special in that their semantics can make direct reference to focus values. A simple semantics for *only* is given in (18).[11] (18) requires that the ordinary meaning of the prejacent (the sentence excluding *only*) is true and that all elements in the sentence's focus value other than the ordinary meaning are false. In words, (14) will be true iff John introduced Bill to Sue and introduced no one else to Sue, and (15) is true iff John introduced Bill to Sue and introduced no one else to Bill.

(18) only(φ) = 1 iff ∀ψ → ExFClo(φ): ψ=1 → ψ = φ.

Krifka (2006), who compares different theories of association with focus, discusses the example in (19) below. Krifka invites us to evaluate (19) in a context where Bill has a brother, say John. In that case, *Sam talked to John's mother* will be one of the propositions in the domain of *only*. Since, *Sam talked to Bill's mother* and *Sam talked to John's mother* are different propositions, *Sam talked to John's mother* should be false. But, in the context considered by Krifka, (19) is judged to be true. Krifka dubs this problem 'the only child problem'.[12]

(19) Sam only talked to BILL's mother.

[11] I simplify a lot by, e.g, treating only as a propositional operator and not factoring in intensionality. It is not possible to do justice to the huge literature on *only* here. See Ippolito (2008), Beaver and Clark (2008) for recent accounts and overviews. See sections 2.5.1 and 3.7 for more discussion.

[12] See Krifka (2006), Riester and Kamp (2009), for solutions to the 'only child problem'.

2.3.2.2 Only children in discourse

What is of interest for the purposes of this chapter is that a version of Krifka's 'only child problem' appears in cases of non-truth-conditional focus, as well. Consider, first, the example in (20).[13] Whereas in the association with focus example above, the sentence was judged true even if John and Bill were brothers, (20B) is only judged felicitous if John and Bill are *not* brothers.

(20) (in a context where John and Bill have the same mother)
A: Sam called John's mother.
B: No, PETER called BILL's mother. #

To see that this not predicted by the theory, consider the different constituents of (20B) and their Existential F-closures in (21). Since they are all entailed by *Sam called John's mother*, (20B) is predicted to be fine.

(21)	Constituent	Existential F-closure	Given
a.	$[_{IP}$ $Peter_F$ called $Bill_F$'s mother]	∃x∃y. called(x's mother)(y)	✓
b.	$[_{VP}$ called $Bill_F$'s mother]	∃x∃y. called(x's mother)(y)	✓
c.	$[_{V}$ called]	∃x∃y. called(x)(y)	✓
d.	$[_{DP}$ $Bill_F$'s mother]	∃xιy. mother(x)(y)	✓
e.	$[_{NP}$ mother]	∃x. mother(x)	✓
f.	$[_{DP}$ $Bill_F$]		✓

More interestingly for the purposes of this section, the judgment is reversed when *Bill* remains unaccented, as in (22). (22B) is felicitous when John and Bill have the same mother, but infelicitous otherwise. The question mark next to (22B) indicates that the judgment is not perfectly clear-cut. The minimum requirement for (22B) to be accepted is that both participants A and B know that John and Bill are brothers. When encountered with (22B) native speakers usually ask for a reason why participant B uses a different description to refer to the same individual. The issue, then, seems to be one of the pragmatic and contextual circumstances under which it is accepted to refer to an individual using different descriptions. Indeed, no problem arises if native speakers are told that participant A is a good friend of John, but has

[13] Dimitriadis (2001) and Sauerland (2004) (attributed to O.Percus, p.c.) discuss similar examples that contain pronouns rather than proper names. They do not notice the consequences for a general theory of focus licensing, however.

never met Bill, and participant B is a very good friend of Bill that has never met John. This contextual information is enough to allow the two participants to use different descriptions to refer to their friend's mother. It is instructive to compare (22B) with one of the usual examples that are violations of Given Domains. Consider (23B), a clear violation of Given Domains since *Sam talked to Bill* does not entail that *someone called John*. All speakers find (23B) unacceptable. Even those that find it difficult to accept (22B) perceive a clear contrast between (22B) and (23B).

(22) (in a context where John and Bill have the same mother)
A: Sam called John's mother.
B: No, PETER called Bill's mother. ?

(23) A: Sam called John.
B: No, PETER called Bill. #

Our theory, however, treats (22B) exactly like (23B). *Bill* is obviously not Given since there is no antecedent that it corefers with. This is a violation of Given Domains that should lead to infelicity. What about (24a) and (24b)? Here, the entailment *Sam called John's mother → someone called Bill's mother* holds, as long as the relevant relation is that of *contextual* entailment.[14] The DP *Bill's mother* also conforms with our definition of Given Domains, then, since there is an antecedent, namely *John's mother* with which it corefers.

(24)	Constituent	Existential F-closure	Given
a.	$[_{IP}$ Peter$_F$ called Bill's mother]	∃x∃y. called(Bill's mother)(y)	✓
b.	$[_{VP}$ called Bill's mother]	∃x∃y. called(Bill's mother)(y)	✓
c.	$[_{V}$ called]	∃x∃y. called(x)(y)	✓
d.	$[_{DP}$ Bill's mother]	Bill's mother	✓
e.	$[_{NP}$ mother]	∃x. mother(x)	✓
f.	$[_{DP}$ Bill]	Bill	*

As far as (24a) to (24d) are concerned, then, (22) is exactly parallel to the

[14] Contextual entailment is defined as in (i) (Magri 2009). Compare also the discussion in section 2.5.2. The fact that the condition on deaccenting is sensitive to shared background assumptions is already argued for on independent grounds in van Deemter (1994), Schwarzschild (1999).

(i) For any two propositions ψ and φ, ψ entails φ *given common knowledge* $\mathcal{W}^{@}_{ck}$ iff $\psi \cap \mathcal{W}^{@}_{ck}$ [subset] φ.

example in (25). Deaccenting *the president* in (25B1) is obligatory, if the response is uttered at a time when Obama is the president. Accenting *the president*, on the other hand, as in (25B2) is obligatory if the response is uttered at a time when Obama is not the president. In other words, the choice of F-marking *the president* depends on whether it is Given or not; if Obama is the president then *Obama* in (25A) can act as an antecedent *the president* corefers with. If Obama is not the president, then there is no coreferential antecedent for *the president*, so it is not Given.

(25) A: John called Obama.
B1: No, BILL called the president.
B2: No, BILL called the PRESIDENT.

The theory predicts the pattern once Economy is brought into play. Consider, first, that, as shown in (27), (25B1) with the focus representation in (26), satisfies Given Domains in a context where Obama is the president (*Given1*) and not in a context where Obama is not the president *(Given2)*.

(26) $[_{DP}$ Bill$]_F$ called the president.

(27)	Constituent	Existential F-closure	Given1	Given2
a.	$[_{IP}$ Bill$_F$ called the president]	∃x. called(the president)(x)	✓	*
b.	$[_{VP}$ called the president]	∃x. called(the president)(x)	✓	*
c.	$[_{V}$ called]	∃x∃y. called(x)(y)	✓	✓
d.	$[_{DP}$ the president]		✓	*

The syntactic representation in (28) that corresponds to (25B2) leads to Existential F-closures that satisfy Given Domains in both contexts, as shown in (29). In a context where Obama is the president, then, both (26) and (28) satisfy Given Domains. AvoidF, however, will kick in and favor (26) over (28), since (26) contains one F-marked constituent, while (28) contains two. In a context where Obama is not the president, however, (26) violates Given Domains, but (28) does not. AvoidF is, then, irrelevant; (28) will have to be chosen as it is the only focus representation that satisfies Given Domains.

(28) $[_{DP}$ Bill$]_F$ called $[_{DP}$ the president$]_F$.

(29)	Constituent	Existential F-closure	Given1	Given2
a.	[$_{IP}$ Bill$_F$ called the president$_F$]	∃x∃y. called(x)(y)	✓	✓
b.	[$_{VP}$ called the president$_F$]	∃x∃y. called(x)(y)	✓	✓
c.	[$_V$ called]	∃x∃y. called(x)(y)	✓	✓
d.	[$_{DP}$ the president] $_F$		✓	✓

The judgments for the examples in (20) and (22) correspond exactly to the judgments for the examples in (25); the choice of F-marking *Bill* depends on whether *Bill's mother* is Given or not; if John and Bill have the same mother then *John's mother* in (25A) can act as an antecedent *Bill's mother* corefers with. If John and Bill do not have the same mother, then there is no coreferential antecedent for *Bill's mother*, so it is not Given. The problem is, however, that the choice whether to focus *Bill* or not, does not depend on whether *Bill's mother* (and the other constituents dominating it) are Given or not. Given Domains requires that *all* constituents are focus domains. *Bill* will, thus, be a focus domain that leads to a violation of Given Domains, since *Bill* will never be Given in this context. One might think that *Bill* actually *is* Given in the context of *Sam called John's mother*, since it can be inferred that *Sam called Bill's mother*. Notice, however, that inferences of this kind are not sufficient to introduce discourse referents; the pronoun *he* in (30) cannot be understood to refer to Bill, even in a context where all interlocutors know that Bill is John's brother.

(30) Helen talked to John's mother. He hasn't called her for ages.

A straightforward way to proceed, then, would be to modify Given Domains in a way that doesn't require *Bill* to be Given. But if not all constituents are focus domains, then the theory should define which are.

2.4 Focus and recursion

In the previous sections I identified four ingredients that a focus theory should have: i. it should utilize the notion of *Givenness*, rather than alternative information-structural notions such as *new*, or *Q-A Congruence*; ii. it should employ an economy metric to choose between competing focus representations; iii. it should include non-pragmatic rules of phonology; iv. it should allow at least some constituents to not be focus domains, i.e. to not be required to be Given. This section brings these four properties

together within a recursive model of grammar.

The framework that will be presented here is a modification of Wagner's (2005) recursive theory of prosodic structure. Wagner adopts the assumption of *prosodic compositionality*, according to which "the overall prosody of an expression is computed based on decisions made locally" (Wagner 2005, 30).[15] Prosodic structure, then, is computed for subparts of expressions, and the output is treated as an atomic element for further computation of the larger element containing it. In other words, prosodic structure is determined cyclically. The phonological cycle follows the syntactic cycle, as in, e.g., Chomsky (2001); i.e. it applies after Spell-Out. Once a syntactic cycle is completed, the structure that is assembled is spelled-out and rules of phonology apply. It is the task of the theory, then, to determine i. what subparts of an expression constitute cycles, and ii. what rules determine prosodic structure within such domains. Wagner makes the case that cycles correspond to *associative domains*. While he argues that prosodic domains are associative domains, Wagner still adopts Schwarzschild's Given Domains, according to which all constituents of an expression constitute focus domains.[16] I modify Wagner's system so that focus domains, like prosodic domains, also coincide with associative domains.

2.4.1 Domains of coordination

This section presents Wagner's evidence from the prosody of coordination structures that prosodic domains are associative domains.

Consider the coordinate structures in (1) and (2). While the coordinate structure in (1) is unambiguous, the one in (2) is not. (2) can have distinct truth-conditions, depending on the relative scope between the two coordinators.

(1) Hernia and Lysander and Demetrius
(2) Hernia or Lysander and Demetrius

In logic, the ambiguity of (2) is avoided by the use of parentheses. The reading in which *or* takes scope over *and* is represented in (3a), while the one where *and* takes scope over *or* is represented in (3b).

[15] For other cyclic analyses of prosodic assignment, see Adger (2006), Kratzer and Selkirk (2007).

[16] Wagner does not explicitly adopt Given Domains. Its effects still follow in Wagner's system, however. See section 2.6.2 for discussion.

(3) a. H or (L and D) *or* > *and*
b. (H or L) and D *and* > *or*

(1) can also be represented in logical notation in two ways. The two bracketings in (4), however, do not correspond to distinct truth-conditions.

(4) a. H and (L and D)
b. (H and L) and D

The difference between (3) and (4) reflects the fact that *'H and L and D'* is an *associative domain* while *'H or L and D'* is not. Associative domains are domains where the *associativity law* holds; i.e. domains in which rebracketing while keeping the order constant produces no truth-conditional effects.[17]

(5) *Associativity Law*
The associativity law holds iff for any binary operation ●,
(x ● y) ● z = x ● (y ● z).

Wagner focuses on the fact that the difference between (1) and (2) is reflected in their possible prosodic structures. Native speakers conceive (1) to be able to have a flat prosody in which all three names have prosodically the same status. Spoken renditions of (2), however, cannot have the same flat prosody. Instead, (2) requires a more articulated prosody in which two of the three elements are perceived to be grouped together. The perceived grouping is a reflection of lengthening effects. Lengthening, in turn, is an effect of prosodic boundaries, indicated here with the use of the symbol '|', the 'pipe symbol' in Wagner (2005); the larger the number of pipes the greater the strength of the boundary. So, while (6) is possible for (1), it is not for (2). (2) will be uttered either as in (7b) or as in (7c). Importantly, (7b) corresponds to the scope in (3a), and (7c) to the one in (3b). In other words, prosody disambiguates (2).

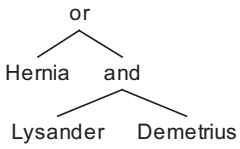
(6) H | and L | and D

(7) a. H | or L | and D #
b. H || or L | and D *or* > *and*
c. H | or L || and D *and* > *or*

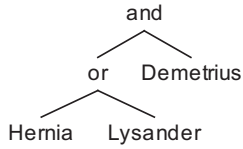
[17] Elena Anagnostopoulou (p.c.) points out that a theory of the cycle based on the Associativity Law is not fully derivational. Indeed, the grammar needs to have access at three elements at the time in order to make a decision on whether to Spell-Out or not.

In compositional theories of the syntax-semantics interface in which semantic scope is reflected on syntactic structure by the c-command relations between scope talking elements, the two possible bracketings in the logical representations of (2) in (3) correspond to the two syntactic markers in (8a) and (8b), respectively.

(8) a.



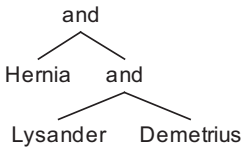
b.



Assuming, then, that the two prosodic structures in (7b) and (7c) reflect the two syntactic structures in (8a) and (8b), respectively, i.e. that prosodic grouping in (7) reflects constituency in (8), it is understood how prosody disambiguates (2).

Although this is part of the story, it is not enough to explain why (2) is not compatible with flat prosody, while (1) is. (1), which is structurally equivalent to (8a) , as shown in (9), *can* have a flat prosody.

(9)



In a recursive system like the one adopted by Wagner, however, (8) and (9) can still differ.[18] The prosodic facts will be explained, if it is assumed that prosodic structure encodes not only structure, but also its derivational history. The key claim will be that whereas (9) has been assembled in a single cycle, (8a) (and (8b)) have been assembled in two cycles. The perceived prosodic grouping, then, correspond to cycles. The question that remains to be answered, of course, is what determines the derivational properties of (8a/b) versus (9). Wagner (2205,19) proposes the principle in (10).

(10) *Associative domains*
Syntactic cycles are associative domains.

[18] An obvious alternative would be that (1) corresponds to a trenary-branching structure. I refer to Wagner (2005) for detailed discussion and syntactic evidence for all the structures in (8) and (9).

According to the Associative Domains principle, the moment the grammar merges consecutively more than two elements, it has to decide whether to Spell them Out, or not, i.e. whether to map them to a single cycle, or two different cycles. If the result of merging, e.g., three elements corresponds to an associative domain, i.e. a domain in which the associativity law holds, then Spell-Out in a single cycle will be possible. If the result of merging three elements consecutively does not correspond to an associative domain, grammar will have to map the structure to two different cycles. Since prosodic grouping (manifested through lengthening effects) reflects the cycle, it is predicted that associative domains can have a flat prosody, but non-associative domains will necessarily have an articulated prosody. The initial observation with regard to (1) and (2) was that (1) is an associative domain, but (2) is not. Associative Domains predicts, then, that (1) will be able to have a flat prosody, but (2) will not.

2.4.2 Prosodic structure

This section spells out in more detail the system of prosodic notation in Wagner (2005). The mapping from the syntactic cycle to the phonological cycle is made explicit and the correlation between perceived prosodic grouping and associativity is derived.

2.4.2.1 Notation

The prosodic notation used by Wagner is that of the bracketed metrical grid. Bracketed metrical grids allow us to represent all the basic properties of prosodic structure, namely the perceived grouping and strength of boundaries, as well as accent placement and the relevant prominence between accents. I introduce the basic notation using the grid in (11).

(11)
```
| x  x  x |
| x  x | x |
| x | x | x |
  A  B  C
```

The metrical grid in (11) consists of three levels, each corresponding to a separate line. The basic unit of grid levels is the foot. Feet are separated by the use of the pipe symbol. Foot boundaries at higher levels of the grid necessarily correspond to boundaries at lower levels of the grid, so that feet at higher grid lines have stronger boundaries than feet at lower levels. The strength of a boundary can

be read off by the height of the number of pipes. Boundary rank is defined as in (12) (Wagner 2005, 66).

(12) *Boundary Rank*
The rank of a prosodic boundary is the number of the highest grid line containing a pipe at that boundary.

In (11), the boundary between C and AB is stronger, than between A and B. Boundary rank, through its acoustic correlates (e.g. lengthening), is perceived as grouping, so that in (11), A and B will be perceived to be grouped together, excluding C.

As for accent placement, it is assumed that all and only top-line grid marks receive pitch accents. Material that does not project to the highest grid level is either unaccented or the accents are realized within a reduced pitch range. In (11) all A, B, and C receive pitch accents. The system does not encode what is usually called Nuclear Pitch Accent, i.e. which pitch accent is perceived as the most prominent one. This follows from the Nuclear Stress Generalization in (13).

(13) *Nuclear Stress Generalization*
Within each foot, nuclear stress is perceived on the last of those grid marks that project highest.

In the example in (11) the nuclear stress of the whole expression will be perceived to fall on C. It is also predicted that B will be perceived to receive a more prominent stress than A. For both boundaries and stress, then, Wagner's bracketed metrical grid only makes predictions about relevant boundary strength and accent prominence. Wagner (2005) discusses this point extensively and presents supportive experimental evidence.

2.4.2.2 Prosodic Matching

The next step is to show how metrical grids like (11) are assembled within the recursive model of grammar discussed above.

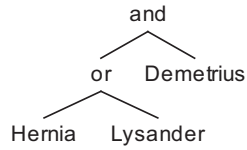
2.4.2.2.1 (Hernia or Lysander) and Demetrius

I illustrate the procedure by discussing first the case of the coordination structure in (14a), under the bracketing in (14b), with the syntactic structure in (14c).

(14) a. Hernia or Lysander and Demetrius

b. (Hernia or Lysander) and Demetrius

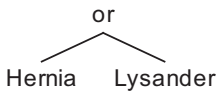
c.



Starting point for building up the structure in (14c) is the DP *Demetrius* with its phonetic representation, in (15a). The second step is to merge *Lysander* with *Hernia*, as in (15b).

(15) a. Starting point [$_{DP}$ Lysander] | x |

b. First Merge



| x | x |

At this point the grammar decides whether to Spell-Out or continue merging within the same cycle. Continuing merging leads to a violation of Associative Domain, so the only option is to Spell-Out. At this point, the syntactic structure in (15b) is sent off to the phonological component and rules of phonology apply. The basic rule assumed in this system maps the syntactic structure to a single prosodic foot in the metrical grid. The rule responsible is the one in (16).

(16) *Prosodic Matching*

a. Concatenate
Concatenate the prosodic representation of the elements in the domain aligning their top lines and filling the columns where necessary.

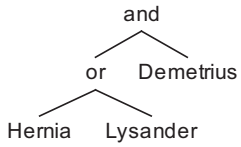
b. Project
Create a new top-line grid line n by projecting all grid marks on line n-1, and mapping them into a single foot on line n.

The result of applying (16) on the structure in (15b) is given in (17).

(17) | x x |
| x | x |
H L

Once a cycle has been Spelled-Out and its prosodic structure has been established, it can no longer be manipulated. It can, of course, enter a new cycle as an atomic element. This happens after merging *[Hernia or Lysander]* with *Demetrius* in (18).

(18) Second Merge



Before projecting the grids to a single foot in a new line, the two elements of the cycle are concatenated, as in (19a). The result of projection is given in (19b).

(19) a.
| x x | x |
| x | x | x |
H L D

b.
| x x x |
| x x | x |
| x | x | x |
H L D

Since Prosodic Matching maps the output to a single prosodic foot in a new grid line, boundary strenth ends up reflecting syntax; constituents within a single cycle are separated by prosodic boundaries of equal rank. A direct consequence of applying Prosodic Matching on the second cycle is that the constituents within the higher cycle will be set off by stronger boundaries than constituents within a lower cycle. So, the consequence in (20) holds (Wagner 2005, 45).

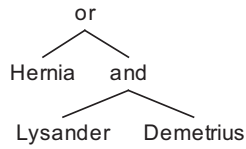
(20) *Scopally Determined Boundary Rank*
If the Boundary Rank at a given cycle is n, the rank of the boundaries between constituents of the next higher level is n+1.

In (19b), constituents assembled within the first cycle, namely *Lysander* and *Hernia*, are separated by a boundary of rank 1. Constituents assembled in the second cycle, namely *Hernia or Lysander* and *Demetrius*, are separated by a boundary of rank 2. As discussed in the previous section, boundary rank is reflected in lengthening effects that, in turn, are responsible for the perception of groupings of elements. Since all grid marks have projected to the top line, all three elements will receive pitch accents. Keeping with the Nuclear Stress Generalization, *Demetrius* is perceived to be most prominent, and *Lysander* more prominent than *Hernia*. Overall, the prosody of (14) can be schematically represented as in (21).

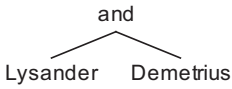
(21) ||| HERNIA | or LYSANDER || and DEMETRIUS |||

2.4.2.2.2 Hernia or (Lysander and Demetrius)

Under the bracketing in (22b), (22a) works like (14a), above, with the only difference that *Lysander* and *Demetrius* have been merged first.

(22) a. Hernia or Lysander and Demetrius
b. Hernia or (Lysander and Demetrius)
c. 

After first merge, the grammar again decides whether to Spell-Out or continue with the same cycle. Associative Domains forces the former. (23b) is the prosodic structure of (23a), after Prosodic Matching has been applied.

(23) a. 

b. | x x |
| x | x |

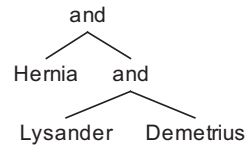
After merging *Lysander and Demetrius* with *Hernia*, and the whole structure has been Spelled-Out, Prosodic Matching applies with the result in (24). Given that the structure has been assembled in two cycles, *Hernia* will be separated from the rest of the structure with stronger boundaries, than *Lysander* from *Demetrius*, which have been assembled in a lower cycle. This reflects the perceived grouping of *Lysander* with *Demetrius*. Stress assignment, again, assigns pitch accents to all three elements. *Demetrius* will be perceived to be the most prominent element.

(24) | x x x |
| x | x x |
| x | x | x |
H L D

(25) ||| HERNIA || or LYSANDER | and DEMETRIUS |||

2.4.2.2.3 Hernia and Lysander and Demetrius

The last example is the one in (26a). (26a) has the same structure as in (22), namely the one in (26b). It was observed that while (22) is necessarily assigned an articulated prosody, (26) can have a flat prosody.

(26) a. Hernia or Lysander and Demetrius
c. 

The crucial difference is that after first merge has assembled *Lysander and*

Demetrius the grammar does not have to Spell-Out. Since *Hernia and Lysander and Demetrius* respects the Associative Law, and is, thus, an Associative Domian, the option exists that merge continues within the same cycle. After *Hernia* is merged too, then, the whole structure is sent off to phonology, and Prosodic Matching is applied only once, with the result in (27). Since all the elements have been assembled in a single cycle, they will all be separated by boundaries of equal rank, so no grouping will be perceived tro exist between them. Pitch accents will be assigned to all three elements, and *Demetrius* will be the most prominent one.

(27)
| x x x |
| x | x | x |
H L D

(28) || HERNIA | or LYSANDER | and DEMETRIUS ||

2.4.2.3 Prosodic Subordination

So far, I have been disregarding the coordinators and treating coordination structures as if they consisted of proper names only. In this section coordinators, and functors more generally, are factored in. This requires the introduction of a second rule of phonology, Prosodic Subordination.

Consider the example in (29a). The main observation about its prosody is that *and* receives no pitch accent, as shown in (29b). This cannot possibly be captured by Prosodic Matching, since it requires that all elements in the grid project to the top line.

(29) a. Lysander and Demetrius
b. LYSANDER and DEMETRIUS

The intuition behind the stress pattern in (29b) is the prevalent intuition in the literature on focus that arguments are more prominent than functors. In (29b), *and* is the functor and *Lysander* and *Demetrius* its two arguments. Wagner captures this requirement with the principle in (30) (Wagner 2005, 211).

(30) *Complement Prominence*
If A and B are elements in a cycle, and A is a functor and B its complement, B is more prominent that A.

The new rule of phonology that is responsible, in most cases, for satisfaction of (30), is Prosodic Subordination in (31) (Wagner 2005, 210).[19]

[19] Given the Nuclear Stress generalization, Complement Prominence can also be satisfied by

(31) *Prosodic Subordination*
A is subordinated to B by concatenating A and B such that if A projects to line n, B projects to line n+1.

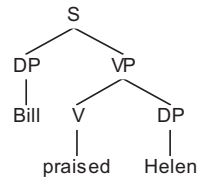
(29a) is an associative domain, so it can be assembled in a single cycle. The only way (30) will be satisfied, i.e. the only way *Lysander* and *Demetrius* will be more prominent than *and*, is that, after Spell-Out, Prosodic Subordination applies, instead of Prosodic Matching. The result of Prosodic Subordination, where *and* is subordinated to its arguments, is shown in (32).

(32) | x x |
| x | x | x |

2.4.2.4 Transitive sentences

In this section I will illustrate the assignment of prosodic structure to a simple sentence with a transitive verb, like the ones I have been using so far. I will use the example in (33a), assuming the simplified syntactic structure in (33b).

(33) a. Bill praised Helen. b.



Our starting point for assembling (33b), is *[$_{DP}$ Helen]*. After first merge, the VP has been build, and the grammar decides whether to Spell-Out or merge *Bill* in the same cycle. The Associativity Law does not hold for *Bill praised Helen*. (34a) is not equivalent to (23b), since order of application matters; while (34a) ends up meaning

---

application of Prosodic Matching, in cases where the argument precedes the functor. Thus, Wagner's system manages to capture the generalization in (i). I refer to Wagner (2005) for the empirical grounding of the generalization, and much discussion. See section 3.5 for more discussion and application.

(i) *Prosodic Asymmetry*
a. When a functor A precedes its complement B, the functor may be on a par with its argument or may be prosodically subordinated: [A' B'] ; [A B'].
b. When a functor A follows its complement B, A is prosodically subordinated: [B' A].

that Bill praised Helen, (34b) ends up meaning that Helen praised Bill. [20]

(34) a. ([[Bill]]) [[praised Helen]]
b. [[Bill praised]] ([[Helen]])

The VP *praised Helen* is, then, Spelled-Out and rules of phonology should apply. Which rule? The only principle that needs to be taken into account is Complement Prominence; i.e. *Helen*, the argument, should be more prominent than *praised*, the functor. As Wagner notices, Complement Prominence will be satisfied regardless of whether Prosodic Matching (PM) or Prosodic Subordination (PS) is applied. (35a) is the result of applying PM, and (35b) that of applying PS. (35a) corresponds to the stress pattern in (36a), and (35b) to the one in (36b). Given the Nuclear Stress Generalization in (13), *Helen* will be more prominent in both cases, and Complement Prominence will be satisfied. The theory predicts, then, that both (36a) and (36b) will be possible, as is, indeed, the case.

(35) a.
| x x |
| x | x |
praised Helen

b.
| x |
| x | x |
praised Helen

(36) a. PRAISED HELEN

b. praised HELEN

After second merge of the VP with the subject, the structure is Spelled-Out and Prosodic Matching applies.[21] Since the structure is assembled in two cycles, the prosody will necessarily be articulated. Given our choice of rule for the first cycle in (24), the resulting structure will either be the one in (37a) or the one in (37b).

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[20] The brackets in (5) correspond to *Functional Application*, defined as in (i), from Heim and Kratzer (1998).

(i) *Functional Application*
If α is a branching node and {β,γ} the set of α's daughters, then α is in the domain of [[ ]] if both β and γ are and [[β]] is a function whose domain contains [[γ]]. In this case, [[α]] = [[β]] ([[γ]]).

[21] The prosody of subjects is more complicated than that. Wagner (2005, 6.3.2) argues, following Arregi (2002), that the prosody of subjects requires a revision of Complement Prominence, as in (ii).

(ii) *Complement Prominence (revised)*
If A and B are sisters and A is the functor and B its argument, then B is more prominent than A unless A already contains an argument.

(37) a.
| x x x |
| x | x x |
| x | x | x |
Bill praised Helen

b.
| x x |
| x | x |
| x | x | x |
Bill praised Helen

Overall, then, two possible prosodic patterns are predicted for simple transitive sentences, the ones in (38a) and (38b).

(38) a. ||| JOHN || PRAISED | HELEN |||
b. ||| JOHN || praised | HELEN |||

2.4.3 Enter Givenness

The previous section discussed the prosody of syntactic structures in a vacuum. I presented Wagner's recursive model assuming no F-marking, and no pragmatic factors regulating it. In this section I go back to the main concern of this chapter by factoring in considerations of Givenness licensing.

One major issue in integrating pragmatics-dependent factors of prosody assignment in Wagner's model, will be their interaction with the pragmatic-independent rules discussed in the previous section. Consider, first, the example in (39). Whereas Complement Prominence would predict the VP in the answer to fall under the pattern shown in the previous section, so to be either of the ones in (39B2) or (39B3), only (39B1), where the direct object is necessarily deaccented is felicitous. In other words, there have to be principles other than Complement Prominence that regulate stress assignment, and these principles should override Complement Prominence.

(39) A: Bill dissed Helen.
B1: No, he PRAISED Helen.
B2: He PRAISED HELEN. #
B3: He praised HELEN. #

If such rules exist, it should be part of the theory to determine when they apply. One side of this issue arises in the theory of focus as the puzzle of All-Given and All-New constituents being assigned the same prosody; the VPs in (40) and (41) do not differ in stress assignment. They both follow the pattern of the previous section, where the verb can either receive a pitch accent or remain unaccented.

(40) A: I asked everyone to praise Helen. What did Bill do?
B1: He PRAISED HELEN.
B2: He praised HELEN.

(41) A: What did Bill do?
B1: He PRAISED HELEN.
B2: He praised HELEN.

Recall that in theories that check all elements for Givenness the verb and direct object in (3B1/B2) are both F-marked, whereas neither is in (40B1/B2). The fact that (40) and (41) share the same prosodic possibilities, then, comes as a coincidence; there doesn't seem to be any principled reason why this should be so.[22]

A second puzzle has to do with distinguishing the prosody of (40) from that of (42). In a system where Givenness is evaluated for all constituents, the two were indistinguishable in terms of focus structure; both the verb and the direct object are F-marked in both cases.

(42) A: What did Bill do to whom?
B1: He PRAISED HELEN.
B2: He praised HELEN. #

This section addresses these issues by making explicit the principles that govern the relation between F-marking and prosody. Next to Wagner's (2005) *Focus Prominence*, I assume the existence of a second principle *Focus Projection*. The main innovation is, however, a revision of Cyclic Domains. I propose that only cyclic nodes are required to be Given.

(43) *Cyclic Domains*
Cyclic nodes must be Given.

Cyclic nodes are the root nodes of syntactic structures that are Spelled-Out. Cyclic Domains requires that it is only those nodes that must be Given. The definition of Givenness, has not changed. Schwarzschild's definition is repeated here in (44).

(44) *Givenness*
An utterance U counts as *Given* iff it has a salient antecedent A and
a. if U is of type e, then A and U corefer.

[22] This is not true of all theories that adopt Given Domains. Schwarzschild's unrestricted theory presented in section 2.6.1.2 captures the generalization.

b. otherwise: A entails the Existential F-closure of U, modulo ∃-type shifting.

AvoidF, the economy principle responsible for choosing between competing syntactic structures will also be computed locally, at the level of the cycle. Violations of economy at a lower cycle are fatal; no manipulation of higher cycles can save a derivation with a violation of economy in a lower cycle. AvoidF, is repeated in (45). This principle will have to be modified too, but not until section 2.4.3.2.

(45) *AvoidF*
F-mark as little as possible, without violating Givenness.

I will now illustrate the workings of the system, focusing on the prosody of the verb phrases in the examples above.

2.4.3.1 Focus Prominence

2.4.3.1.1 Narrow focus

Consider, first, the example in (46). (46B) is only felicitous if the verb receives a pitch accent and the object is deaccented. Recall, that regular stress assignment allows that either both the verb and the object receive pitch accents or that only the object does. Since these pattern are unavailable in this case, some principle other than Complement Prominence must be responsible here.

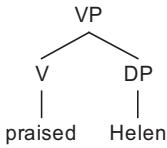
(46) A: Bill dissed Helen.
B: No, Bill PRAISED Helen.

As shown in section 2.4.2.4, VPs are assembled in a single cycle. The VP in (47a), then, constitutes a cycle. Cyclic Domains in (43) requires that the VP is *Given*. This is obviously not the case for (47a) and competitors with F-marking must be considered. The syntactic representation with the minimal F-marking that is Given is the one in (47b).[23] It is, then, F-marking on *praised* that forces *Helen* to be

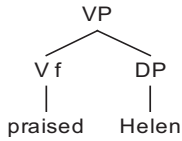
[23] In fact, AvoidF cannot distinguish between (47b) and the structure in (ia), where only the VP is F-marked; both contain a single F-marker. The Existential F-Closure of (ia) is Given; *Bill dissed* Helen entails *∃P∃x. P(x)*. If (ia) is not ruled out by Economy, the accent pattern in (ib) should also be available, contrary to fact. I ask the reader to tolerate the assertion in the main text for the time being. The issue will be solved in section 2.4.3.2.1. where the economy principle is modified.

deaccented.

(47) a.



b.



Given our two rules of phonology, deaccenting of *Helen* can be derived, if application of Prosodic Subordination is forced. This can be achieved with the principle in (48) (cf. Wagner 2005, 274).

(48) *Focus Prominence*
If A and B are both elements in a cycle, and A is F-marked and B is not, A is more prominent than B.

Focus Prominence forces Prosodic Subordination of non-F-marked elements to F-marked elements.[24] Applying Prosodic Subordination to (47b), gives us the prosodic structure in (49).

(49) | x |
| x | x |
praised Helen

Since *Helen* does not project to the top grid line, it receives no pitch accent. Notice that the prosodic structure in (49) violates Complement Prominence; *Helen*, the argument, is less prominent than *praised*, the functor. As Wagner (2005, 274) points out, then, there should be an ordering between the two principles, according to which Focus Prominence outranks Complement Prominence.

(50) Focus Prominence >> Complement Prominence

2.4.3.1.2 All-Given constituents

Consider now the example in (51). The VP in B's answer exhibits the same pattern as the out-of-the blue case discussed in section 2.4.2.4; either both verb and object

---

(i) a. $[_{VP}$ praised Helen$]_F$
b. praised/ PRAISED HELEN

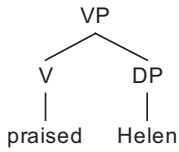
[24] Modulo Prosodic Asymmetry (cf. footnote 19).

receive pitch accents, or only the object does.

(51) A: I asked Max to praise Helen. What did Bill do?
B1: He PRAISED HELEN.
B2: He praised HELEN.

What distinguishes (51) from (46), is that, in this case, the VP itself and all the elements within it are Given. (52), therefore, will be chosen over competing syntactic representations that contain F-features.

(52)



Since there are no F-features involved, Complement Prominence is the only relevant principle. Prosodic Matching and Prosodic Subordination both satisfy Complement Prominence, so either can apply. Application of Prosodic Matching leads to the prosodic structure in (53a), and of Prosodic Subordination to (53b). The resulting stress patterns are shown in (54).

(53) a.
| x x |
| x | x |
praised Helen

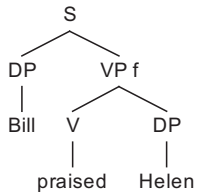
b.
| x |
| x | x |
praised Helen

(54) a. PRAISED HELEN

b. praised HELEN

Note that at the next level, the VP will have to be F-marked for the whole sentence to be Given. This is possible since the whole VP enters the next cycle as a single element. The top node of the lower cycle is still available for operations at the next cycle, then, but other elements inside it are not. F-marking the whole VP will have no effect for the prosodic structure of the lower cycle, which has already been assembled. The syntactic structure in (55) will have the prosodic structure in (56a), or (57b), depending on the choice in (53). The prosodic structure of the whole sentence will be no different than that of a sentence containing no F-marking.

(55)



(56) a.

	x	x |
x |	x	x |
x |	x	x |
He	praised	Helen

b.

		x |
x |		x |
x |	x	x |
He	praised	Helen

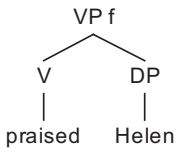
2.4.3.1.3 All-New constituents

The same result should be obtained for cases with VPs that contain only new elements. As shown in (57), they too follow the regular pattern, with the two felicitous answers in (B1) and (B2).

(57) A: What did Bill do?
B1: Bill PRAISED HELEN.
B2: Bill praised HELEN.

The VP in (57), is obviously not Given without F-marking. A syntactic structure that would satisfy Givenness is the one in (58).[25]

(58)



Since top nodes in a cycle are not represented in the metrical grid, F-marking the whole VP has no effect on the prosodic structure of (58). The two relevant elements are not F-marked, so Complement Prominence will be the only relevant principle. Of course, F-marking the whole VP can potentially affect the prosodic structure of the higher cycle. As in the previous example, this will not be visible here, since Focus Prominence will be satisfied regardless of whether one applies Prosodic Matching or Prosodic Subordination at the sentence level.

The prosodic structure of the VP in (58), then, will be the same as the one of the VP in (52). This is no coincidence; the two VPs are alike in that the elements inside

[25] In fact any structure in which the VP is F-marked would do. See section 2.6.1.3 for discussion.

them are not F-marked, so that principles referring to F-marking are not relevant for determining their prosody; they are both subject to Complement Prominence.

2.4.3.2 Focus Projection

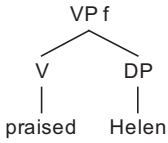
In this section I discuss examples in which a VP and all the elements inside a VP are not Given, but still their prosodic structure differs from that of All-New VPs, like the one in the previous section. In order to accommodate such examples, I will introduce a third principle, *Focus Projection*, and revise our economy principle.

Consider the example in (59).[26,27] Speaker B's answer is only compatible with both the verb and the object receiving pitch accents, as in (B1). The stress pattern in which only the object is accented, as in (B2), is infelicitous.

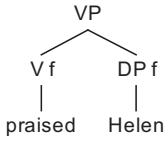
(59) A: Bill dissed Mary.
B1: No, Bill PRAISED HELEN.
B2: No, Bill praised HELEN. #

This contrasts with the example in (57), where both B1 and B2 are possible. Notice, however, that our theory cannot distinguish between the two; it assigns both the syntactic structure in (60a). For (57), (60a) is the only structure that satisfies Given Domains. For (59), both (60a) and (60b) satisfy Given Domains; *Bill dissed Mary* entails both that *someone did something* and that *someone did something to someone*. AvoidF, then, favours (22a) since it minimizes the number of F-features, as shown in (61). This is the wrong prediction.

(60) a.



b.



[26] The example is a modification of Schwarzschild's (1999, 170) example in (i).

(i) John cited Mary but he DISSED SUE.

[27] Wagner (2005) does not consider such examples. See footnote 54 for Büring's (2008) argument that they cannot be handled within Wagner's G-marking system.

(61)	Constituent	Existential F-closure	Given	AvoidF
a.	$[_{VP}$ praised Helen$]_F$	∃R∃x. R(x)	✓	←
b.	$[_{VP}$ praised$_F$ Helen$_F]$	∃R∃x∃y. R(x)(y)	✓	

2.4.3.2.1 Maximize Focus Presupposition

To make the syntactic structures of (57) and (59) differ, I capitalize on the fact that (60b) is Given in (59), but not in (57). In order to be able to do so, I will drop Schwarzschild's AvoidF principle, in favour of a version of Heim's (1991) Maximize Presupposition.[28]

Heim (1991) discusses the distribution of definite and indefinite articles, in examples like (62). The question Heim raises is why (62a) should be infelicitous even when uttered in a context where the sun is shining. Heim's solution builds on the fact that in the same context (62b) is also felicitous and true, since its presupposition (vaguely that there is exactly one sun) is satisfied. Heim proposes the principle in (63), that will disallow an utterance when a true competitor with more presuppositional content is available.[29]

(62) a. A sun is shining. #
b. The sun is shining.

(63) *Maximize Presupposition*
If *φ*, *ψ* are both true in a context *c*, and the presuppositions of *ψ* are stronger than those of *φ*, and are met in the context of utterance *c*, then one must use *ψ* in *c*, not *φ*.

If, as Heim argues, (62a) carries no presuppositions and (62b) does, the presuppositions of (62b) are obviously stronger than that of (62a). Since both sentences are true, Maximize Presupposition forces us to choose (62b) over (62a).

In (64) I present a version of Maximize Presupposition tailored to the needs of Givenness licensing. I name it Maximize Focus Presupposition.

[28] Other authors that use Maximize Presupposition in this context are Wagner (2005), Sauerland (2005), Kucerova (2007). Predecessors of Maximize Presupposition in the literature on focus are William's (1997) Don't Overlook Anaphoric Possibilities, and Schwarzschild's (1997) Attentiveness Maxim.

[29] The formulation in (64) is borrowed from Singh (2009).

(64) *Maximize Focus Presupposition*
If φ and ψ are syntactic representations that are both Given in a discourse *d*, and the Existential F-closure of φ asymmetrically entails the Existential F-closure of ψ, then one must use φ in *d*, not ψ.

Substituting AvoidF with Maximize Focus Presupposition in (61) reverses the result, as shown in (65). Since *someone did something to someone* entails that *someone did something*, but not the other way around, the Existential F-closure of (60b) is stronger than that of (60a). MFP, then, forces us to choose (60b).[30]

(65)	Constituent	Existential F-closure	Given	MFP
a.	$[_{VP}$ praised Helen$]_F$	$\exists R \exists x.\ R(x)$	✓	
b.	$[_{VP}$ praised$_F$ Helen$_F]$	$\exists R \exists x \exists y.\ R(x)(y)$	✓	←

2.4.3.2.1 Focus Projection

Picking (60b) over (60a) is not enough to derive the stress pattern in (59). Focus Prominence is not relevant for (60b) since both elements of the cycle are F-marked. According to the ranking in (50), then, Complement Prominence should come into play. If this were so, it should be expected that the VP is felicitous with both stress patterns in (B1), since they both satisfy Complement Prominence.

In order to capture the fact that both F-marked elements necessarily receive pitch accents, I will add a principle that requires them to project to the top line of the metrical grid. This is the principle of Focus Projection in (66).[31,32]

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[30] The introduction of MFP does not only help solve the problem with the example in (59). As noticed in footnote 23, AvoidF is not compatible with Cyclic Domains, since it cannot distinguish between (iia) and (iib) for examples like (i). The Existential F-Closures of both (iia) and (iib), in (iiia) and (iiib), are entailed by A's utterance. Since they both contain a single F-marker, AvoidF predicts both to be possible, which is a wrong prediction. Adopting MFP in the place of AvoidF solves the problem; the Existential F-Closure in (iiia) asymmetrically entails the one in (iiib). (iiib) is, thus, correctly predicted to be blocked by (iiia).

(i)	A:	Bill dissed Helen.		
	B1:	No, he PRAISED Helen.		
	B2:	No, he praised/ PRAISED HELEN.	#	
(ii)	a.	$[_{VP}\ [_V$ praised$]_F$ Helen]	b.	$[_{VP}$ praised Helen$]_F$
(iii)	a.	$\exists R \exists x.\ R(\text{Helen})(x)$	b.	$\exists P \exists x.\ P(x)$

[31] Focus Projection should not be confused with *Focus Projection Rules*, as in, e.g., Selkirk (1996) and Schwarzschild (1999). The latter are *syntactic* rules that regulate the distribution of

(66) *Focus Projection*
If A is F-marked and n is the top line in the relevant metrical grid, A projects to n.

When the VP in (60b) is Spelled-Out, Focus Projection will only be satisfied if Prosodic Matching applies. The result is shown in (67).[33]

F-markers. See section 2.6.1 for discussion.

[32] As Michael Wagner (p.c.) points out Focus Projection overgenerates in cases of Second Occurrence Focus. This is, indeed, true of all theories that link pitch accent to F-marking.

[33] Krifka (2004) presents cases of wide vs. narrow focus as counterexamples to Schwarzschild's (and Rooth's (1992)) theory. He discusses the question-answer pair in (i) with the judgments as indicated. (As shown in the main text, the judgment is more complicated than that; the main contrast is between the possible accent patterns in the context of (iA) versus the possible accent patterns in the context of, e.g., *What did John do to which novel?*. For the purposes of this footnote, I accept Krifka's judgment in (i)).

(i) A: What did John do?
B1: He READ ULYSSES. #
B2: He read ULYSSES.

(ii) a. He read$_F$ Ulysses$_F$
b. He [read$_F$ Ulysses$_F$]$_F$

In Schwarzschild's original theory, the distribution of F-features is subject to Selkirk's (1996) *projection rules* (see section 2.6.1). The syntactic representations for B1 and B2, then, are the ones in (iia) and (iib), respectively. Everything else being equal, AvoidF should favor (iia), since it contains fewer F-markers. Krifka assumes that, indeed, everything else is equal, i.e. that both (iia) and (iib) are Given. This is so, because, according to Krifka, (iA) is restricted to activities, so that *∃P. P(John)* entails *∃R∃x. R(x)(John)*. This doesn't seem to be correct, however, since *John slept* could also be a felicitous answer to (iA). (iib) is, then, the only candidate that satisfies Given Domains, and Schwarzschild's theory makes the correct prediction. The example in (iii) is one where both (iia) and (iib) are Given. The judgment is now reversed and Schwarzschild's theory makes again the correct prediction.

(iii) A: What did John do to which novel?
B1: He READ ULYSSES.
B2: He read ULYSSES.#

So, Krifka's challenge is invalid if one drops the assumption that questions like (iA) are restricted to activities. This is confirmed by cases where both candidates are unambiguously Given. A version of Krifka's argument holds, however, for cases like (iii), if one drops Selkirk's Projection Rules. This is the argument presented in the main text against AvoidF and in favor of Maximize Focus Presupposition.

(67) a.
| x x |
| x | x |
praised Helen

b. PRAISED HELEN

Focus Projection will have to outrank Complement Prominence. Does it need to be ranked relative to Focus Prominence? In most cases Focus Projection will be satisfied when Focus Prominence is satisfied. Consider, however, the two examples in (68) and (69). (68B) and (69B) have different accent patterns; in (68B), *Helen* receives a reduced accent, and *Bill* is the most prominent element in the utterance. In (69B), *Helen* receives a pitch accent and, by the Nuclear Stress Generalization, it is the most prominent element in the utterance. Reversing the patterns leads to infelicity, in both cases.

(68) A: John praised Helen.
B: BILL praised HELEN.
(69) A: John praised Mary.
B: BILL praised HELEN.

The question is whether the theory predicts the difference. Consider first (68B). At the VP level, Cyclic Domains is satisfied without the need of any F-marking. Complement Prominence is the only relevant principle on the prosody side, then. Consider the case in which Complement Prominence is satisfied by Prosodically Subordinating *praised* to *Helen*. At the sentence level, the VP is merged with *Bill*. Maximize Focus Presupposition dictates that *Bill* will be F-marked to satisfy Cyclic Domains. Since *Bill* is F-marked, and the VP is not, Focus prominence applies and forces Prosodic Subordination of the VP to *Bill*. The metrical grid of the utterance is given in (70b).

(70) a. $[_S\ [_{DP}$ Bill$]_F\ [_{VP}$ praised Helen$]]$

b.
| x |
| x | x |
| x | x | x |
Bill praised Helen

In the case of (69B), the VP is not Given, so F-marking is required. MFP dictates F-marking *Helen*. On the prosody side, then, *praised* will Prosodically Subordinate to *Helen*. So far, things are exactly the same as in the case of (68B) above. At the next cycle, *Bill* is merged with the VP. *Bill* will be F-marked in order to satisfy Cyclic Domains. What principle is responsible for determining the prosody of the second cycle? If Focus Prominence were responsible, the VP would subordinate to *Bill*. The resulting grid would, then, be the same as the one in (70b), failing to distinguish

(68B) from (69B). Notice, however, that the application of Prosodic Subordination leads to a violation of Focus Projection, since there is an F-marked element, *Helen*, that has not been projected to the top grid. For Focus Projection to be satisfied, prosodic Matching should apply, as in (71b). The grid in (71b) is different from the one in (70b) in exactly the way required; since *Helen* projects to the top grid line, it will receive a pitch accent; and since this is the last grid mark on the top line, it will be the most prominent one.

(71) a. $[_S\ [_{DP}$ Bill$]_F\ [_{VP}$ praised $[_{DP}$ Helen$]_F]]$ b.

| x		x |
| x |		x |
| x |	x |	x |
Bill	praised	Helen

The only way to make sure that Focus Projection will override Focus Prominence in this case is to adopt the ranking in (72).

(72A) Focus Projection >> Focus Prominence >> Complement Prominence

2.4.3.3 Two predictions

In the previous sections I presented a modified version of Wagner's theory of prosodic structure. I departed from Wagner in the way I integrated pragmatic factors in the theory. First, whereas Wagner uses G-marking, I used F-marking. More importantly, I revised Given Domains, so that it only refers to cyclic nodes. A theory that only requires cyclic nodes, rather than all constituents, to be Given, forces us to rethink the relation between Given/ New material and stress. This section presents two predictions of the new theory and argues that they are borne out.

2.4.3.3.1 Embedded Givenness

As discussed in section 2.2.1, Givenness based theories that require all constituents in an utterance to be Given, predict that Given material will always be deaccented, unless F-marking a Given element salvages violations of Given Domains for wider constituents containing that element. (69) was the relevant example.

(69) A: Who did Helen's father praise?
B: He praised HELEN.

Although *Helen* in (69B) does not need to be F-marked to be Given, it will be F-marked for, e.g., the VP to be. As shown in (70), not F-marking *Helen* leads to a

violation of Given Domains for the VP, whereas F-marking *Helen* salvages this violation.

(70)	Candidate VPs	Existential F-closure	Given
a.	[$_{VP}$ praised Helen]	∃x. praised(Helen)(x)	*
b.	[$_{VP}$ praised Helen$_F$]	∃x∃y. praised(x)(y)	✓

If wider constituents containing a Given element, then, are themselves F-marked, F-marking the Given element makes no difference to the Existential F-closure of those constituents. It is predicted, then, that Given material embedded within wider F-marked constituents will never be F-marked. Given Domains does not require them to be, and the economy principle forces them not to be. Hence, they will always be deaccented (unless all the elements in the constituent are Given). Schwarzschild (1999) claims that this prediction is borne out. Consider the example in (71).

(71) A: What did Helen's father do?
B: He PRAISED her.

In a theory in which all constituents need to be F-marked, *praised* will be F-marked because it is not Given. *her* will not be F-marked because it is Given. What about the VP? As shown in (72a), the current F-marking violates Given Domains. F-marking *her*, as in (72b), does not salvage the violation (unlike (70)). The only option, then, is to F-mark the whole VP, as in (72c). Since *praised* is F-marked and *her* is not, *praised* will end up being more prominent than *her*.

(72)	Candidate VPs	Existential F-closure	Given
a.	[$_{VP}$ praised$_F$ her]	∃R∃x. R(her)(x)	*
b.	[$_{VP}$ praised$_F$ her$_F$]	∃R∃x∃y. R(x)(y)	*
c.	[$_{VP}$ praised$_F$ her]$_F$	∃R∃x. R(x)	✓

Things are different in the theory developed in the previous sections, in which only cyclic nodes are required to be Given. The relevant node in the current examples will be the VP. Consider, first, example (69). For the VP to be Given, one could either F-mark the whole VP as in (73a), or F-mark the object, as in (73b). The economy principle forces us to pick the latter, since *someone praised someone* entails that *someone did something*. Focus Prominence will, then, force Prosodic Subordination of *praised* to *Helen*, so *Helen* will receive a pitch accent, but *praised*

won't.

(73)	Candidate VPs	Existential F-closure	Given	MFP
a.	$[_{VP}$ praised Helen$]_F$	∃R∃x. R(x)	✓	
b.	$[_{VP}$ praised Helen$_F]$	∃x∃y. praised(x)(y)	✓	←

The situation will be different in examples were (73b) is not Given, and the syntactic structure in (73a) is forced. Notice that when this is the case, the current theory does not force any F-marking on the verb or the object; these constituents will never be checked for Givenness. Since they are not F-marked, Complement Prominence is the only relevant principle. Example (71), then, where F-marking the VP is required, Complement Prominence is expected to apply. A seen many times before, Complement Prominence allows for the two stress patterns in (74). Neither of which is felicitous in the context of (71A), so it seems that our theory makes the wrong prediction here.

(74) a. He PRAISED HER.
b. He praised HER.

What seems to have remained unnoticed, however, is that the accent possibilities of referential DPs and pronouns contrast sharply in the environment of (71A). Whereas pronouns are necessarily deaccented, the use of the proper name forces CP-prosody, as in (75B1/2). Deaccenting *Helen*, as in (B3), is strongly disfavoured.

(75) A: What did Helen's father do?
B1: He PRAISED HELEN.
B3: He praised HELEN.
B3: He PRAISED Helen. #?

So, whereas Given Domains makes the correct prediction for (71), but the wrong one for (75), Cyclic Domains makes the correct prediction for (75), but the wrong one for (71).

Wagner (2005, 259) provides the following example in support of the claim that Given DPs will deaccent.

(76) Context: John was in the room. Mary came in. What did she do next?
She KISSED him/ John.

According to Wagner, pronouns and proper names are equally felicitous in this case

and are both deaccented. The speakers I consulted, still perceive a contrast between *him* and *John*, as indicated in (77B1/2). More importantly, even the speakers who accept deaccenting of *John*, also allow PC-prosody as in (B3). No speaker, however, allows accenting of *him*, as shown in (B4).

(77) A: John was in the room. Mary came in. What did she do next?
B1: She KISSED him.
B2: She KISSED John. ??
B3: She kissed/ KISSED JOHN.
B4: She kissed/ KISSED HIM. #

It seems that simply mentioning *John* is not enough to license deaccenting. This is further confirmed by the example in (78). In a theory that requires every constituent to be Given, *John* will have to subordinate to the *dissed*, since *John* will be Given, but *dissed* will not be. This is not the case.

(78) A: John was in the room. Mary came in. What did she do next?
B1: She praised some girl that had DISSED him.
B2: She praised some girl that had DISSED John. ??
B3: She praised some girl that had dissed/ DISSED JOHN.
B4: She praised some girl that had dissed/ DISSED HIM. #

Moreover, the pattern is highly context-sensitive. If the context is slightly changed, as in (79), the judgement in (77) is sharpened.

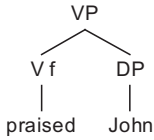
(79) A: John's mother was in the room. Mary came in.
What did she do next?
B1: She PRAISED him.
B2: She PRAISED John. #
B3: She praised/ PRAISED JOHN.
B4: She praised/ PRAISED HIM. #

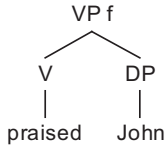
Changing the context as in (80), reverses things between B2 and B3.

(80) A: John was in the room, waiting for Mary. She would come in to deliver her verdict onJohn's future in the company. Mary came in. What did she do?
B1: She PRAISED him.
B2: She PRAISED John.
B3: She praised/ PRAISED JOHN. ?
B4: She praised/ PRAISED HIM. #

I conclude, then, that the felicity of the pattern in (B2) is not tied to whether *John* is Given or not; *John* is Given in all the examples above, but only deaccented in (80).

I will now discuss how the present theory deals with the observed pattern. In the theory adopted here, the stress pattern in (B2) corresponds to the syntactic structure in (81a), whereas the one of (B3) to the one in (81b).

(81) a. 

b. 

(81b) is Given in all the examples above. The question, then, is whether (81a) is also Given. Notice that, if it is, it will not be blocked by (81b), since its Existential F-closure (*someone did something to John*) is stronger than that of (81b) (*someone did something*). Although there is no overt antecedent in (77)-(80) that licenses (81a), I propose that such an antecedent can be accommodated. Accommodation of the antecedent explains the context dependence of the (B2) pattern; the context in (80) makes it very likely that what Mary did was related to John, she could, e.g., fire or hire him. It is, then, possible to accommodate something like *Mary did something to John* (or possibly a strengthening of the question to *What did she do to John*) that licenses the Existential F-closure of (81a). The context in (79), on the other hand, makes it more difficult for the same proposition to be accommodated. In a situation where the two prominent participants are Mary and John's mother, it is difficult to accept that what Mary did should be directed to John. The bare context in (76) brings John into prominence, and the set-up of the little story makes it likely that what happened, was something between Mary and John. It seems, however, that most speakers like to keep all the options open; it's equally plausible that Mary could have fallen asleep. Speakers can use F-marking to manipulate the discourse and force accommodation. I will discuss some such cases in more detail in section 2.6.2.3.

A theory that assumes Given Domains (or any theory that creates a necessary link between Givenness of *John* and its possibility to be deaccented) cannot explain why *John* does not always deaccent in (76)-(80). Moreover, it will never allow CP-prosody in (B3). The theory presented here, that adopts cyclic Givenness, readily predicts CP-prosody, as in (B3). The possibility of deaccenting *John* in the B2 responses is linked to the possibility of accommodating an antecedent for the Existential F-closure of (81a). I conclude, then, that the present theory makes the correct prediction for the case of full DPs. This, of course, leaves us with the puzzle of the rigid prosody of pronouns; deaccenting of a pronoun should have a different

source from deaccenting full DPs. I will pick this issue up in chapter 4, where the prosody of pronouns is discussed in detail.

2.4.3.3.2 Deaccenting new material

Starting in section 2.2.1, I have been assuming a focus theory that only uses one primitive notion of information structure, that of Givenness, as defined by Schwarzschild (1999). As discussed in section 2.3.2, however, Schwarzschild's original definition of Given Domains still makes a prediction about material that is not Given. It predicts that they will be necessarily F-marked (and, hence, accented). If they were not, they would immediately lead to violations of Givenness, since at least themselves, would not be Given. So, the generalization in (82) was argued to hold.

(82) Novelty indicates F-marking/ prominence.

A theory that adopts Cyclic Domains does not lead to the generalization in (82). Since not all material is required to be Given, non-cyclic nodes will only be F-marked to allow cyclic nodes to be Given; their own status is irrelevant for F-marking. If, then, an environment is found in which leaving a non-cyclic element unmarked does not affect the Givenness status of the cyclic node it is dominated by, this element is predicted to be able to remain unaccented (in fact, it is predicted that only Complement Prominence will be responsible for its prosodic structure).

In section 2.3.2, I argued that examples like the one in (83) are, indeed, counter-examples to the generalization in (82). Although *Bill* is not Given, and *mother* is, *Bill* does not have to be more prominent than *mother*.

(83) (in a context where John and Bill have the same mother)
A: Sam called John's mother.
B: No, PETER called Bill's mother. ?

I also showed that the full range of facts can be derived once it is assumed that it is not *Bill* that is required to be Given, but the full DP *Bill's mother*. This result can be readily accommodated in the present theory, as long as it is shown that complex DPs like *Bill's mother* are cycles. One argument to that effect comes from the prosody of VPs containing such complex DPs. Consider the simplified version of (83), in (84), where *Bill* is also Given.

(84) A: Sam called Bill's mother.
B: No, PETER called Bill's mother.

Let us focus on the prosodic structure of the VP *called Bill's mother*. Since the VP is Given, neither it nor any of its constituents will be F-marked. CP-prosody is expected to arise. As seen before, VPs are cyclic nodes so it is possible that their constituents are assembled in a single step. If Wagner's argument from the prosody of coordination structures in sections 2.4.1 and 2.4.2 is correct, elements belonging to a single cycle allow a flat prosody. An articulated prosody, on the other hand, is an indication that the elements have been assembled in different cycles. Indeed, the prosodic structure of the VP in (83B) is articulated. Speakers do not accept a flat prosody, as in (85a). The only possible prosody is an articulated one, in which *Bill's mother* are perceived to be grouped together to the exclusion of *called*. This is explained if *Bill's mother* is a separate cycle.

(85) a. || called | Bill's | mother ||
b. ||| called || Bill's | mother |||

The second thing that needs to be shown is that assembling *called Bill's mother* in a single cycle would violate Associative Domain. This is trivially the case, since (86a) is not the same as (86b), even if the latter was somehow made to be possible.

(86) a. ⟦called ⟧ (⟦Bill's mother ⟧)
b. (⟦ called Bill ⟧) ⟦ 's mother ⟧

Allowing the DP *Bill's mother* to be a cycle, has the immediate consequence that only the full DP is a cyclic node, so it is the only one required to be Given. Given our definition of Given for referential DPs, *Bill's mother* is Given in the context of (44), without the need of any F-marking inside it. The prosodic structure of the cycle will, then, only be affected by Complement Prominence, that does not require or allow *Bill* to be accented. The rest of the pattern of such cases follows, then exactly as discussed in section 2.3.2; F-marking *Bill* in the context of (83) is disallowed by the economy principle. F-marking *Bill* in a context where John and Bill are not brothers is required for *Bill's mother* to be Given.

2.5 Focus and exhaustification

2.5.1 The exhaustification implicatures of focus

Rooth (1992) observes that utterances that only differ in their stress patterns give rise

to different inferences. He compares the examples in (1B1/2). (1B1), where the subject is more prominent than the verb, implies that the speaker passed but some other relevant individuals (say, the speakers flatmates) did not pass. (1B2), on the other hand, where the verb is more prominent than the subject, implies that the speaker just passed the exam and he didn't, e.g., ace the exam.

(1) A: What happened with the exam?
B1: Well, I passed.
B2: Well, I PASSED.

Rooth argues that the inferences of (1B1/2) are cases of *exhaustification implicatures*. Scalar implicatures are usually seen as a consequence of the Gricean maxim of quantity. The example in (2a) carries the inference that John ate some but not all the cookies. The hearer strengthens the meaning of (2a), because it compares it with an alternative utterance, that of (2b). The maxim of quantity requires that speakers say as much as they know. Since John ate all the cookies is more informative (stronger in terms of entailment) that John ate some of the cookies, the hearer reasons that if the speaker knew that (2b) is true, she would have said so. Therefore, the speaker must not know that (2b) is true. Assuming that the speaker is well-informed, it follows that she knows that it is not true. How come (2b) is an alternative to (2a)? The usual assumption (Horn 1972) is that certain elements, like *some*, are associated with a set of scalar alternatives.

(2) a. John ate some of the cookies.
b. John ate all of the cookies.

Rooth proposes to analyse the inferences of (1) just like scalar implicatures. The question, then, is what is the relevant set of alternatives and how it is triggered (since, obviously, it cannot be a lexical property, like in the case of *some*). (1B1) and (1B2) only differ in accent placement, so the relevant set, call it C, will be restricted by focus. The most obvious possibility is to equate C with the set of propositions that entail the Existential F-Closures of (1B1)/(1B2) (the focus value of (1B1)/(1B2) in Alternative Semantics), the way it was done for the restrictor of *only* in section 2.3.2.1. C, then, will be as in (3) for (1B1), and as in (4) for (1B2).

(3) $C = \{ p \mid p \rightarrow \exists x.\ passed(x)\}$ = {the speaker passed, John passed, Bill passed, …}
(4) $C = \{ p \mid p \rightarrow \exists P.\ P(\text{the speaker})\}$ = {the speaker passed, the speaker failed, the speaker aced,…}

The sets in (3) and (4) will include propositions that are stronger than the assertions. For, e.g., (1B1), propositions like *the speaker and John passed*, or *the speaker and Bill passed*. Rooth shows, then, how the same Gricean reasoning derives the desired implicature. Since, *the speaker and John passed* is stronger than *the speaker passed*, Gricean reasoning will conclude that it is false. If *the speaker passed* is true and *the speaker and John passed* is false, it follows that *John passed* is false. Same reasoning leads to the conclusion that *Bill passed* is false. In fact, all the exact same reasoning leads to the conclusion that no individual other than the speaker passed, or, in the case of (1B2), that no property other than passing is true of the speaker. These inferences are obviously too strong; the alternative individuals in (1B1) are restricted to, e.g., the speaker's flatmates, and the alternative properties in (1B2) to those linked to some exam. Rooth argues, then, that C is actually a free variable whose value is contextually resolved. Instead of fixing the value of C, Existential F-Closures only help constraining the value of C. Specifically C should be a subset of the sets in (3) and (4). So, the set of alternatives that is used for calculating exhaustification implicatures is subject to the constraint in (5) (Rooth 1992).

(5) *Constraint on C*
In constructing the scalar implicatures of a sentence α, a set of alternatives C must be chosen such that $C \subseteq \{p \mid p \rightarrow ExFClo(\alpha)\}$

As Rooth argues, exactly parallel considerations apply in the case of *only*. A sentence like the one in (6) does not mean that John called Mary and that no other relation holds between John and Mary. (6) is true even if, for example, Mary is John's mother.

(6) John only CALLED Mary.

The restriction of *only*, then should also be equated with some contextually supplied set of alternatives. *only*, in this case, takes two arguments, a free variable over propositions, and a proposition, as in (7). The variable C, then, is subject to the constraint in (5).

(7) $only(C)(\varphi) = 1$ iff $\forall \psi \in C: \psi=1 \rightarrow \psi=\varphi$.

The next question regarding the exhaustification implicatures in (1) is how the set C is triggered? For the purposes of this chapter I will assume one aspect of a grammatical theory of scalar implicatures (Chierchia 2004, Fox 2006, among others), according to which scalar implicatures are the result of an exhaustification operator

Exh that attaches at the sentence level. *Exh* has the semantics of *only* with the only difference that it asserts (rather than presupposes) its propositional complement (Fox 2006). As for *only*, then, the set of alternatives C is introduced as an argument of the operator and it is subject to the constraint in (5).[34]

(8) $Exh(C)(\varphi) = 1$ iff $\varphi = 1 \wedge \forall \psi \in C: \psi=1 \rightarrow \psi= \varphi$.

The semantics in (8) substitute the Gricean reasoning used by Rooth. for (1). The meaning of (9) corresponds exactly to the desired strengthened meaning of (1B1). The set C will be a subset of the set in (3), in this case restricted to propositions including the speaker's flatmates. (9) asserts that the speaker passed and that every relevant proposition that entails ExFClo(I_F passed) is false. If John and Bill are the relevant flatmates of the speaker, such propositions will include *John passed*, *Bill passed*, and *John and Bill passed*. It follows that the speaker passed and that no other relevant individual passed.

(9) Exh (C) (I_F passed)

In the mini-discourses used in this chapter, the relevant discourse will be restricted to Speaker A's utterance. This is also the antecedent that licenses F-marking. It is natural to assume that the antecedent that licenses the given F-marking will restrict the relevant discourse. So, in the simple example in (7), C will be as in (8). All the propositions in (8) entail that *Someone praised someone*. The result is that (7B) asserts that Bill praised Helen, and implies that no other praising was done. This is intuitively correct.

(7) A: John praised Mary.
B: No, BILL praised HELEN.
(8) C = { John praised Mary, Bill praised Mary, John praised Helen}

The remainder of the section discusses the ways in which the exhaustification implicatures of focus affect the distribution of F-features. This is mainly done through

[34] I assume here without argument that *Exh* obligatorily attaches at the sentence level. This is of course not the assumption of grammatical theories of implicatures, whose main argument is the existence of embedded implicatures. The question arises, of course, whether the exhaustification implicatures of information-structural focus provide evidence for local attachment of *Exh* (presumably at cyclic nodes in the current theory). I have to leave this question for some future occasion.

the Mismatch Hypothesis (Magri 2009), i.e. the fact that exhaustification implicatures cannot contradict common knowledge. Section 2.5.2 presents the Mismatch Hypothesis. Section 2.5.3 discusses how the Mismatch Hypothesis derives what Schwarzschild (1999, 165-166) has called the "rhetorical effects" of focus in corrective contexts. Section 2.5.4 uses exhaustification implicatures and the Mismatch Hypothesis to counter an argument by Kehler (2005) against Givenness based approaches like Schwarzschild's and the one adopted here.

2.5.2 The Mismatch Hypothesis

Consider the example in (9) (from Schlenker (2006), attributed to E.Chemla (p.c.)). Why does (9b) sound odd, even in a context where the sentence is true and it is contextually equivalent to (9a)?

(9) Every professor of this department assigns the same grade to all of his students.
  a. This year, prof.Smith assigned an A to (all of) his students.
  b. This year, prof. Smith assigned an A to some of his students. ?

Magri (2009) considers this and similar examples and reaches the generalization in (10). (9a) and (9b) correspond to ψ and φ, respectively. (9a) logically asymmetrical entails (9b), they are contextually equivalent given the context in (9)[35], and *some* and *all* are standardly assumed to form a Horn-scale.

(10) *Magri's First Generalization*
Given two sentences φ and ψ such that:
  a. ψ logically asymmetrically entails φ;
  b. φ and ψ are contextually equivalent;
  c. φ and ψ are scalar alternatives;
then φ sounds odd while ψ sounds fine.

Magri points out that (10a) and (10c) are the standard requirements for inclusion

[35] Contextual equivalence is defined in (i) below. The definition is taken from Sauerland (2003), Schlenker (2006), via Singh (2009).

(i) *Contextual Equivalence*
φ and ψ are contextually equivalent with respect to context c iff
$\{w \in c : [[\varphi(w)]] = 1\} = \{w \in c : [[\psi(w)]] = 1\}$

in the strengthened meaning of an utterance, i.e. the meaning after computation of scalar implicatures. The strengthened meaning of an utterance is the ordinary meaning conjoined with the negation of its alternatives, or, as seen in the previous section, the meaning after application of the *Exh* operator. Magri restates the generalization in (10), as in (11) (I follow Singh (2009) in calling it the *Mismatch Hypothesis*).[36]

(11) *Mismatch Hypothesis*
If the blind strengthened meaning $[\![\varphi]\!]$ of a sentence φ is a contradiction given common knowledge (namely $[\![\varphi]\!] \cap \mathcal{W}^{o}_{ck} = \emptyset$), then sentence φ sounds odd.

The strengthened meaning of (9b) is the conjunction of (9b) with the negation of (9a). Given that (9a) and (9b) are contextually equivalent, the strengthened meaning is a contradiction given common knowledge, and (9b) sounds odd.

Given that focus marking gives rise to exhaustification implicatures, it is expected that those implicatures will also be sensitive to the effects of the Mismatch Hypothesis. A first such case concerns examples like the one in (12), in which Speaker B's utterance entails Speaker A's utterance.[37]

(12) A: Every young student likes Mary.
B: No, every STUDENT likes Mary. #

Why is (12B) infelicitous? The problem does not seem to have to do with Givenness. The minimal F-marking in (13) would render the sentence Given; *every young student likes Mary* entails $\exists P.\ \forall x(P(x) \rightarrow x \text{ likes Mary})$.

(13) Every $[\text{student}]_F$ likes Mary.

The problem arises because of the exhaustification implicatures of (12B). Since *every young student likes Mary* entails $\exists P.\ \forall x(P(x) \rightarrow x \text{ likes Mary})$, it will be a member of the context set C in (14). The strengthened meaning of (12B) is the one in

[36] Magri's main point is that the effect is derived only if the strengthened meaning is computed in terms of *logical* rather than *contextual* entailment; in other words that it is 'blind' to common knowledge. As far as I can see, the issue is not directly relevant in the exhaustification implicatures of focus cases I am concerned with here.

[37] The effect is not restricted to corrective contexts, as shown in (i).

(i) Yesterday, every young student called Mary.Today, every STUDENT called Mary. #

(15).

(14) Exh (C) (every [student]$_F$ likes Mary)
(15) Every student likes Mary and every young student does not like Mary.

It is evident that (15) is a contradiction; there can be no world in which every student likes Mary, but every young student does not like Mary, since the latter entails the former. Updating the context with (15), then, is a violation of the Mismatch Hypothesis (and probably also of conditions on proper update); if ⟦ φ ⟧ picks the empty set, its union with $\mathcal{W}^{\circ}_{ck}$ will also be empty.

2.5.3 The rhetorics of correction

Schwarzschild (1999, 165) considers the example in (16) and notices that, although (16B1) and (16B2) have the same content, they are used to reject different parts of Speaker A's claim; whereas B1 is taken to reject the main clause assertion that John did the borrowing, B2 is taken to reject the content of the relative clause that Max had purchased the book. Schwarzschild's conclusion is that the rhetorical relation that a speaker wants to establish between two utterances restricts the range of salient antecedents. So, if one wants to reject the relative clause then only the relative clause will be visible for Givenness licensing and focus marking will be as in (16B2). If one wants to reject the main clause assertion, however, either F-marking should be possible; the main clause licenses focus on *Max*, and the relative clause licenses focus on *borrowed*. According to Schwarzschild (1999, 165), "…[(16B1)] is chosen because it unambiguously requires the main clause as an antecedent."

(16) A: John borrowed the book that Max had purchased.
B1: No, MAX borrowed it.
B2: No, Max BORROWED it.

Schwarzschild considers his example in terms of saliency of antecedents. In this section I discuss an example very similar to the one of Schwarzschild, factoring in the effects of the Mismatch Hypothesis. I give a simple formalization of the effects of ambiguity in a bidirectional OT model.

As in (16), the two accent patterns in (17B1) and (17B2) correspond to rejecting different parts of Speaker A's utterance. Let me refer to the first conjunct in (17A) (*John dissed Helen*) as *claim$_1$*, to the second conjunct (*John praised Mary*) as *claim$_2$*, and to the whole utterance as the *full claim*. (17B1) is taken to reject claim$_1$, rather

than the full claim. (17B2), on the other hand, is taken to necessarily reject the full claim.

(17) A: John dissed Helen and praised Mary.
B1: No, he PRAISED Helen.
B2: No, he PRAISED HELEN.

Consider, first, (17B2). Its Existential F-Closure in (18a) is entailed by the Existential F-Closure of (17B1) in (18b). All things being equal, then, (17B1) should block (17B2) by MFP. The first question is why this does not happen. Following Schwarzschild's reasoning above will not help, since there is actually no antecedent that can license the F-marking in (17B2). Once one of the available antecedents has been picked, Economy should kick in and rule (17B2) out in favour of more economical alternatives.

(18) a. ExFClo(17B2): $\exists R \exists x.R(x)(john)$
b. ExFClo(17B1): $\exists x.praised(x)(john)$

Schwarzschild's reasoning turns out to be correct, however, if one doesn't consider the issue in terms of the availability of antecedents, but in terms of the requirements of the Mismatch Hypothesis. Consider the strengthened meaning of (17B2) in (19a). The Mismatch Hypothesis will only be satisfied if the Speaker rejects the full claim of Speaker A, since both $claim_1$ and $claim_2$ are part of the negated propositions in (19a). The strengthened meaning of (17B1) in (19b), on the other hand, only requires that $claim_1$ is rejected. (17B2), then, is chosen because it rejects the full claim in order for the Mismatch Hypothesis to be satisfied.

(19) a. John praised Helen, and he didn't praise Mary, and he didn't diss Helen, and he didn't diss Mary.
b. John praised Helen, and he didn't diss Helen.

I still have not explained, however, why (17B1) cannot be used to reject the full claim. Even if its strengthened meaning does not require both claims to be rejected, it is still compatible with it being so. In addition, it would provide a cheaper ExFClo in terms of Economy. The answer lies with Schwarzschild's claim that speakers try to minimize ambiguity. The problem with using (17B1) to reject the full claim is that it doesn't do so unambiguously; (17B2) can also be used to reject $claim_1$. Moreover, there exists an accent pattern that can reject the full claim unambiguously, the one in (17B2).

I provide a simple formalization of this competition approach using the model of *Bi-directional Optimality Theory*. Optimality Theory is a competition-based model that assumes an input, a set of competing candidates generated by the input, and a set of ordered violable constraints. The winning candidate (or, optimal candidate) is the one with the least violations of the constraints, where violations of higher ranked constraints are costlier than violations of lower ranked constraints.

OT-syntax takes the speaker's perspective; the input is the desired meaning and the output candidates a set of syntactic representations. OT-semantics takes the opposite perspective, that of the hearer; the input is a syntactic representation and the output a set of meanings. Blutner (2000) develops an OT model, Bi-directional OT, in which the two perspectives are evaluated at the same time. The set of candidates consists of pairs of form and meaning <*f, m*>. Constraints on form pick the best candidate from the speaker's perspective by ordering the candidates; <*f', m*> > <*f, m*>. The same applies on the hearer's side. Optimal candidates are, then, defined as in (20).[38]

(20) <*f,m*> is a weak optimal candidate iff
   a. there is no weak optimal candidate <*f',m*> such that <*f',m*> > <*f,m*>.
   b. there is no weak optimal candidate <*f,m'*> such that <*f,m'*> > <*f,m*>.

A consequence of the definition of weak optimality in (20) is that there can be more than one optimal candidates. Consider the tableau in (21). On the form side, there are competing phonological realizations that differ on accent placement. On the meaning side, there are the different uses; reject $claim_1$ or reject the full claim. All the pairs are in principle possible except one; <*he PRAISED HELEN, reject* $claim_1$> is not possible, since, by the Mismatch Hypothesis, *he PRAISED HELEN* necessarily rejects the full claim, as discussed above. The consequence of that is that the pair <*he PRAISED HELEN, reject full claim*> does not violate the relevant constraint, *Avoid Ambiguity*. Since the Mismatch Hypothesis is compatible with *he PRAISED Helen* rejecting either $claim_1$ or the full claim (although it forces rejection of $claim_1$, as seen above), both pairs <*he PRAISED Helen, reject* $claim_1$> and <*he PRAISED Helen, reject full claim*> violate Avoid Ambiguity.

Let us start evaluating optimality with <*he PRAISED HELEN, reject full claim*>. This is a weak optimal pair since it wins over its competitors on both the meaning and form side; on the meaning side it is the only available pair; on the form side, it

[38] Blutner also defines the notion of a *strong optimal candidate*. Strong optimality only picks a single optimal pair, and cannot derive the facts I am interested in here.

competes with <*he PRAISED Helen, reject full claim*> which contains a violation of Avoid Ambiguity. All the pairs considered so far are excluded from the next step of evaluation; <*he PRAISED HELEN, reject full claim*> because it is an optimal pair, and <*he PRAISED Helen, reject full claim*>, because it loses to the first pair (so it cannot be a weak optimal pair). In the next step of evaluation, the same procedure is applied to the remaining pairs. <*he PRAISED Helen, reject claim*$_1$> is the only available pair, which will, then, come out as weak optimal, since it has no competitors. The two optimal pairs , then, are <*he PRAISED HELEN, reject full claim*> and <*he PRAISED Helen, reject claim*$_1$> and speakers' intuitions that the single focus example will only be used to reject claim$_1$, and the double focus example will be used to reject the full claim are derived.

(21)

	Avoid Ambiguity	
He PRAISED Helen	✓ *	*
He PRAISED HELEN	-	✓
	Reject claim$_1$	Reject full claim

It should be clear at this point that the reasoning discussed above is not part of grammar proper, but rather operates at the level of language use. The "form-meaning" pairs compared above are not pairs of syntactic structures and semantic representations. They are pairs of phonological realizations and intended rhetorical moves.

2.5.4 Kehler's (2005) challenge

2.5.4.1 The problem

Kehler (2005) notices the contrast between (22) and (23); whereas accenting both the verb and its object is strongly preferred in (22), the exact opposite holds for (23). Kehler presents the facts as a challenge to Schwarzschild (1999). Since his argument holds for the theory presented here as well, I present it as it applies here.[39]

[39] Example (23) is a modification of Kehler's original example in (i).

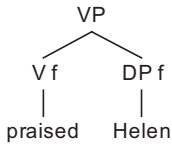
(i) John read the menu, and then he ORDERED a HAMBURGER.

(22) A: Bill dissed Mary.
B1: No, he PRAISED HELEN.
B2: No, he praised HELEN. ??

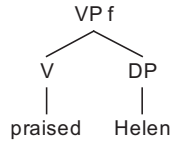
(23) A: Bill read the menu.
B1: No, he ORDERED a HAMBURGER. #
B2: No, he ordered a HAMBURGER,

(22B1) and (22B2) correspond to the syntactic representations in (24a) and (24b) respectively. (24a) corresponds to the Existential F-Closure in (25a) and (24b) to the one in (25b). Economy favours (25a) over (25b), since the former asymmetrically entails the latter. (24b) is, thus, blocked, and (22B2) is unavailable.

(24) a.



b.



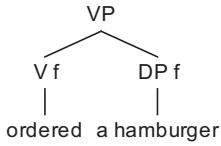
(25) a. ∃R∃x∃y. R(x)(y) b. ∃P∃y. P(y)

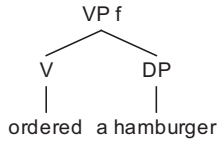
Kehler's question is, of course, why the exact parallel reasoning does not lead to the same result in the case of (23). The syntactic structures would be as in (26) and the Existential F-Closures as in (27). Notice that Givenness is licensed for (27); *Bill read the menu* entails *∃R∃x∃y. R(x)(y)*. The question, then, is why the double focus structure in (26a) is ruled out, but the one in (24a) is not.[40]

[40] A further issue arises in the theory adopted here given that, as I argued in section 2.4.2., the syntactic representation in (26b) corresponds to the two accent patterns in (i) that conform to Complement Prominence. The question, then, is why (ib)/ (23B1) is not possible under wide focus marking. One could think about this in the competition terms employed in the previous section. (ib)/ (23B1) is not used because there is an accent pattern (ia)/ (23B2) that unambiguously corresponds to the F-marking in (26b).

(i) a. Bill ordered a HAMBURGER. b. Bill ORDERED a HAMBURGER.

Büring (2008) makes a slightly different assessment of the facts. According to Büring, the verb is allowed to be accented in both (22) and (23). The difference between (22) and (23), then, is that (22) allows the verb to bear a nuclear accent, whereas (23) does not. In current terms, that would mean that (ib), that corresponds to (26b), is realized differently than the double accent pattern that corresponds to (26a) (contrary to what I have assumed in, e.g., section 2.4.3.2). If this the case, the issue raised at the beginning of this footnote disappears. However, the theory of prosodic structure described in section 2.4, as it stands, cannot accommodate the difference,

(26) a. 

b. 

(27) a. $\exists R \exists x \exists y.\ R(x)(y)$ b. $\exists P \exists y.\ P(y)$

2.5.4.2 Implicatures again

I propose that (26a) is not excluded by the theory of focus, but rather it is odd because it generates implausible exhaustification implicatures.[41]

After insertion of the exhaustification operator, the LF of (23B1) is as in (28).

(28) Exh (C) (Bill ordered$_F$ a hamburger$_F$)

As discussed in section 2.5.1, the set C contains propositions that entail the Existential F-Closure of the sentence, i.e. propositions that entail $\exists R \exists x \exists y.R(x)(y)$. It was further noticed, with Rooth (1992), that the set is contextually restricted. In cases of Givenness licensing the domain is restricted by the antecedent, i.e. speaker A's utterance in the mini-discourses used here. This is not to say that the proposition expressed by the antecedent will be the only one in set C. As shown in the discussion around, e.g., example (7), the antecedent restricts the pool of possible DP meanings that can substitute for the focused DPs. As shown in the discussion around example (17), the same happens for verb-meanings. So, the strengthened meaning of (22B1), is the one in (19a), repeated here as (29).

(29) John praised Helen, and he didn't praise Mary, and he didn't dis Helen, and he didn't dis Mary.

A speaker uttering (22B1), then, proposes to update the current context *c* with the strengthened meaning in (29). A hearer that accepts this move will include the worlds

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as described by Büring. Doing so, would require a modification of Focus Projection and Prosodic Matching. Forcing F-marked material, not only to project to the top grid line, but to project into separate feet, would probably give us the desired results. Since the issue is not directly relevant to the main point of this section, I will not pursue it further here. For an indication that Büring might be right in distinguishing pitch accents that are the result of F-marking from other pitch accents, see section 2.6.1.3.2.

[41] See Büring (2008) for a different solution based on Relative Givenness (see section 2.6.2.3).

in which John praised Helen, and exclude the worlds in which John praised Mary, John dissed Helen, and John dissed Mary.

Consider now what happens if the same reasoning is followed for (23B1). The strengthened meaning of (28) will end up being the one in (30).

(30) Bill ordered a hamburger, and he didn't read the menu, and he didn't order the menu, and he didn't read a hamburger.

A speaker who proposes to update the context with (30) forces the participants to consider worlds in which Bill ordered the menu and read a hamburger. Given normal circumstances, such worlds contradict common knowledge. Even though (30) does not ask the participants to include such worlds in the common ground, the fact that they are asked to consider them is enough to produce a feeling of oddity. (23B1), then, is odd, for exactly the same reason why (31B1/2) are odd.

(31) A: What did (not) John do?
B1: He didn't order the menu. #
B2: He didn't read a hamburger. #

In order to avoid this result, the speaker can resort to the F-marking in (26b). The strengthened meaning of (32) is the one in (33), and no implausibility issue arises.

(32) Exh (C) (Bill ordered$_F$ a hamburger$_F$)
(33) Bill ordered a hamburger, and he didn't read the menu.

Notice that for the analysis proposed here to hold, it should be impossible to disregard or implicitly cancel these implausible implicatures. In some sense, then, the exhaustification implicatures of focus are as "blind" as Magri's scalar implicatures in footnote 36.

2.6 Comparisons

2.6.1 The syntax of F-marking

One of the basic assumptions made in the beginning of this chapter was that F-marking is unconstrained, freely assigned to syntactic nodes. In other words, F-marking any node on a syntactic tree is in principle possible, and it is only the

requirements of the interfaces that rule specific F-markings in or out. A prominent line of research in the theory of focus (e.g. Selkirk 1984, 1996, Schwarzschild 1999) takes the opposite line, that there are syntactic rules that regulate F-marking. The starting point of such theories is that there is a correlation between accenting and F-marking (and not the other way around); an accented word is an F-marked word. The problem that the syntactic rules try to solve, then, is how some F-marking on a word can license F-marking on a phrase that contains that word, in case some interface rule requires that phrase to be F-marked. Consider, in that respect, the example in (1).

(1) A: What did Bill do?
B: He praised HELEN.

Since *Helen* is accented it will bear an F-marker. Given Domains (or Question-Answer Congruence in Selkirk 1996) requires the VP to be F-marked, as well. The question, then, is if there is any dependency between those two F-markers. Theories that assume syntactic rules regulating F-marking assume that there is, and propose rules that license this kind of dependency in some cases and not in others.

In this section I compare such theories with the one assumed here, focusing on the contrast between (1/2) and (3).

(2) A: What did Bill do?
B1: He praised HELEN.
B2: He PRAISED HELEN.

(3) A: Bill dissed Mary.
B1: No, he praised HELEN. #
B2: No, he PRAISED HELEN.

2.6.1.1 The Selkirk/ Schwarzschild approach

The F-Assignment Rules in (4) are proposed by Selkirk (1996). They are adopted by (the first part of) Schwarzschild (1999), along with Given Domains in (5) and the economy principle in (6). This section discusses this version of the theory.

(4) *F-Assignment Rules*
Basic F-Rule: An accented word is F-marked.
F-Projection:
a. F-marking of the head of a phrase licenses the F-marking of the phrase.
b. F-marking of an internal argument of a head licenses the F-marking of the head.

(5) *Given Domains*
If an element is not F-marked, it must be Given.

(6) *AvoidF*
F-mark as little as possible, respecting Givenness.

Consider first how the rules apply in the case of (2).[42] What the theory needs to achieve is that some accented element inside the VP licenses an F-marker on the VP itself. This can be done by either accenting the direct object, as in (7a) or by accenting both the direct object and the verb, as in (7b). In the former case, the F-marker on the VP is the result of two steps of F-projection, one from the object to the verb and the second from the verb to the VP. In the latter case, there is only one step of projection involved, that from the verb to the VP. So, both (2B1) and (2B2) are licensed. Other possibilities like accenting the verb and leaving the object unaccented, and, hence, with no F-marker, violate Givenness.

(7) a. $[\text{praised}_F\ \text{HELEN}_F]_F$ b. $[\text{PRAISED}_F\ \text{HELEN}_F]_F$

Things are less straightforward for examples like (3). Given Domains does not require F-marking the VP, in this case, and F-marking it will be blocked by Economy. Consider the two possibilities in (8). In (8b) both *praised* and *Helen* are accented, and, hence, F-marked by the Basic F-Rule. Given Domains and Economy are satisfied, so (8b) is possible and predicts the correct accent pattern. The question, then, is if (8a) is ruled out. In (8a), the F-marker on *Helen* is licensed by the basic F-Rule. The F-marker on *praised* is a case of horizontal F-projection. The Existential F-Closures of (8a) and (8b) are the same, so both are Given. Moreover, they share the same number of F-features, so they are not in competition. Examples like (3), lead Schwarzschild (like Selkirk before him) to adopt the notion of a *Foc-marked node*, defined in (9). Foc-marked nodes are subject to the requirement in (10).

(8) a. $\text{praised}_F\ \text{HELEN}_F$ b. $\text{PRAISED}_F\ \text{HELEN}_F$

(9) A *Foc*-marked node is an F-node that is not immediately dominated by another F-marked node.

(10) Foc-marked material must be accented.

Both the candidates in (8) contain only Foc-features. (8b) does not violate (10) since both Foc-marked elements receive pitch accents. (8a), however, does violate (10) since *praised* receives no accent. (8a), then, comes out as a violation on the phonological side of the grammar.

[42] Schwarzschild does not actually consider the case of (2B2). This, however, can be easily accommodated as discussed in the main text.

2.6.1.2 Unrestricted F-marking in Schwarzschild (1999)

As Schwarzschild (1999, 170-1) points out, the introduction of (9) and (10) allows the elimination of the F-Projection rules. The alternative considered by Schwarzschild consists of Given Domains, AvoidF and the principle in (10). Things do not essentially change for cases like (3), so let's consider (2) again (cf. Schwarzschild 1999, 171).[43]

Given Domains requires that the verb, its object, and the VP are all F-marked. According to the definition of Foc in (9), the only Foc-marked node will be the VP. The verb and its object are both immediately dominated by the VP, so they are F-marked, but not Foc-marked. Given (10), the VP must contain an accent. (10) will be satisfied if the object is accented, as in (2B1). (10) will also be satisfied if both the verb and the object are accented, as in (2B2). What prohibits (B3) in (11)?

(11) A: What did Bill do?
B3: He PRAISED Helen.

Schwarzschild assumes the constraint in (12), a version of Complement Prominence. Whereas (2B1) and (2B3) satisfy (12) (given the Nuclear Stress Generalization), (11B3) does not.[44]

(12) A head is less prominent than its internal argument.

2.6.1.3 Unrestricted F-marking and Cyclic Domains

In this section, I first repeat briefly how the present theory deals with examples (2) and (3). I, then, discuss a problem that arises in excluding (11B3), above, and present possible solutions.

Let us start with (3). When Givenness is evaluated at the end of the first cycle, the VP is required to be Given. (13a) and (13b) are the only alternatives that satisfy Givenness. Economy (MFP) chooses (13a). In determining the prosodic structure of (13a), Focus Projection forces the application of Prosodic Matching. Prosodic Matching leads to (3B2), the only possibility generated.

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[43] Foc dispenses with the specific projection rules, but does not dispense with syntactic rules on F-marking altogether, since Foc-marking is defined in terms of *domination*.

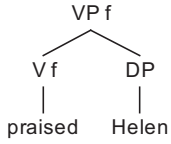
[44] See Schwarzschild (1999, 171-4) for more examples and discussion on the ranking of the constraints.

(13) a. $[_{VP}$ praised$_F$ Helen$_F]$
b. $[_{VP}$ praised Helen$]_F$

As for (2), when Given Domains is evaluated at the end of the first cycle, the VP is required to be Given. The only possibility is to F-mark the whole VP, as in (14); leaving the VP unmarked and marking both or one of the elements it contains would lead to violations of Givenness. So, given that neither the verb not its object are F-marked, the only relevant principle in determining the prosodic structure of the VP, is Complement Prominence. Complement Prominence is satisfied regardless of which rule applies; Prosodic Matching and Prosodic Subordination both satisfy Complement Prominence. Application of Prosodic Matching leads to (2B2) and of Prosodic Subordination to (2B1).

(14) $[_{VP}$ praised Helen$]_F$

A major characteristic of the theory I have adopted and argued for, is that only cyclic nodes are required to be Given. This predicts that F-marking will only be used to allow the cyclic node (in the example above the VP) to be Given; the information-structural status of elements embedded in the cyclic node is not relevant. This same characteristic, however, seems to lead to a problem with examples like (2). In the discussion above (and in the previous sections) only syntactic representations were considered in which either the VP is F-marked and none of the elements inside it is, or some or all of the elements inside the VP are F-marked, and the VP is not. Syntactic representations like the one in (15a) were not considered. In (15a) both the VP and an element inside it (here the verb) are F-marked. (15a) is Given, since the only relevant F-marker is the one on the VP.[45] When the prosodic structure of (15a) is established, the only visible elements are the verb and its object. Since only one of them is F-marked, Focus Prominence forces application of Prosodic Subordination. This leads necessarily to (15B3), which is, however, infelicitous.

(15) a. 

b. B3: He PRAISED Helen. #

[45] This is a consequence of Schwarzschild's definition of Givenness. See Schwarzschild (1999, 150-151) for discussion.

It seems, then, that Cyclic Domains leads to a problem that looks very similar to the projection problem posed by theories that assume syntactic restrictions on F-marking; we need to find a way to rule out F-marking the verb when F-marking the VP is also necessary. Two possible ways to exclude (15a) come to mind, that do not resort to syntactic rules. Before presenting them, note first that the issue is similar to that faced by Schwarzschild's theory the previous section. Schwarzschild excluded (11/15B3) by appealing to the constraint in (12). It is not possible for us to follow this lead; as discussed in section 2.4.3.1.1, Focus Prominence must outrank Complement Prominence.

2.6.1.3.1 No Vacuous F-marking

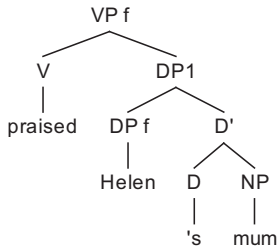
One way to rule out (15B3) and similar structures would be to add a principle that disallows vacuous F-marking. A simple formulation is given in (16).

(16) *No Vacuouc F-marking*
Avoid any F-markers that do not contribute to the Existential F-Closure of the cyclic node.

The F-marker on the verb in (15a) is vacuous since it makes no contribution to the Existential F-Closure of the cyclic node, the VP. This is only so, because the VP itself is F-marked. This should not mean, of course, that all F-markers embedded to other F-markers are disallowed. This would rule out examples like (17a), which end up with the syntactic representation in (17b). DP_1 is the first cyclic node. Givenness and Economy favour the F-marking of *Helen*. At the VP level, F-marking the whole VP is required for Givenness to be satisfied. If this so, the F-marker on *Helen* is vacuous; it contributes nothing to the Existential F-Closure of the VP. This is no problem, however, if (16), like all other principles assumed here, is evaluated cyclically. At the VP level, the only elements that are available are the VP itself, the V and DP_1. (16), then, disallows F-marking both the VP any of the other two nodes, but has no say about the structure of the embedded cycle.[46]

[46] Schwarzschild achieves similar results by defining Foc-marked nodes in (9) using *immediate* domination.

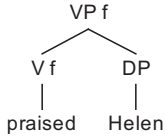
(17) a. A: What did Mary's mum do?
B: She praised HELEN's mum.

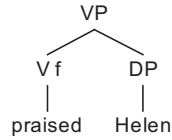
b. 

All the examples ruled out by No Vacuous F-marking are examples that would have been ruled out by AvoidF; they are examples that contain two F-markers, when one would have been enough. The principle, then, has the unfortunate aftertaste of being an AvoidF residue. The next section considers an alternative.

2.6.1.3.2 Avoid Ambiguity

The second way I consider to exclude (15B3) makes use of the intuition used in deriving the rhetorical effects of correction in section 2.5.3. What was seen there was that speakers used certain accent patterns instead of others in order to unambiguously reject some preceding claim. This was captured by a simple constraint, Avoid Ambiguity, employed in a Bi-directional Optimality Theory framework. Although issues of exhaustification and the Mismatch Hypothesis are not relevant here, I will capitalize on the fact that (15a) (repeated here in (18a)) corresponds to the same accent pattern as (18b). Avoid Ambiguity would restrict the accent pattern to the case of (18b), if there is an accent pattern that unambiguously corresponds to F-marking the VP.

(17) a. 

b. 

I use the tools of Bi-directional OT as before in section 2.5.3. Consider the tableau in (18). Like before, the competing forms are prosodic patterns, rather than syntactic representations. The competing meanings, however, are now Existential F-Closures. Since *PRAISED Helen* can correspond to both structures in (17), it also corresponds to both Existential F-Closures in (18). This leads to two violations of Avoid Ambiguity. On the other hand, *PRAISED HELEN* can only correspond to *∃P∃x. P(x)*, and not to *∃R∃x. R(Helen)(y)*. The only relevant pair, then, is *<PRAISED HELEN, ∃P∃x. P(x)>*, and there is no violation of Avoid Ambiguity. This pair turns out to be optimal, since it wins over its competitor on the form side, *<PRAISED Helen,*

∃P∃x. P(x)>. Both pairs are excluded for further computation of optimality. The remaining pair <*PRAISED Helen, ∃R∃x. R(Helen)(x)*> also comes out as optimal.

(18)

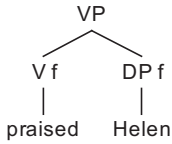
	Avoid Ambiguity	
PRAISED Helen	*	✓ *
PRAISED HELEN	✓	-
	∃P∃x. P(x)	∃R∃x. R(Helen)(y)

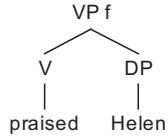
The analysis fails the moment more candidate pairs are considered. Consider, first, the case another form, the pattern *praised HELEN*, and another Existential F-Closure, *∃x∃y. praised(x)(y)*, are included. The account predicts that *praised HELEN* will be treated exactly as *PPRAISED Helen*; it will be restricted to *∃x∃y. praised(x)(y)*. It won't correspond to *∃P∃x. P(x)*, since the pair <*PRAISED HELEN, ∃P∃x. P(x)*> will still be ranked higher. Consider, then, the case one more Existential F-Closure, *∃R∃x∃y. R(x)(y)*, is included. In this case, *PRAISED HELEN* no longer unambiguously corresponds to *∃P∃x. P(x)*, and all pairs on the table are equally ranked to each other.

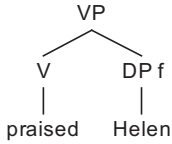
Both problems are solved if one follows Büring (2008) (cf. footnote 40) in assuming that pitch accents that correspond to F-marked elements are different from pitch accents that do not correspond to F-marked material. In current terms, this would mean that (19a) has a different prosodic structure than (19b), and (20a) a different prosodic structure than (20b). The relevant difference is between the number of feet on the top grid-line. If focused elements occupy separate feet, the relevant prosodic structures for (19) and (20) are the ones in (21) and (22), respectively.[47,48]

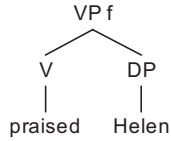
[47] (21b) corresponds to the prosody of (19/20b) after Prosodic Matching has applied. (22b) corresponds to the prosody of (19/20b) after Prosodic Subordination has applied.

[48] As noted before in footnote 40, the theory of prosodic structure I have been using does not derive the structures in (21a) and (22a). This is because Prosodic Matching, that applies in (19a), and Prosodic Subordination, that applies in (20a), both project all elements in a single foot on the top grid line. In order to capture this additional rules of projection are needed that would ensure that F-marked elements project to a separate foot. I don't revise the rules here and simply assume that this can be done.

(19) a. 

b. 

(20) a. 

b. 

(21) a. PRAISED || HELEN b. PRAISED HELEN

(22) a. praised || HELEN b. praised HELEN

A full tableau, then, is the one in (23). (23a) and (23b) unambiguously correspond to *∃P∃x. P(x)*, since they can only be the result of a syntactic structure that F-marks the VP and nothing inside it. (23c), (23d) and (23e) each correspond to two Existential F-Closures. They all correspond to *∃P∃x. P(x)*, since they are possible in structures where the VP, as well as some element(s) inside it, are F-marked.[49] They each also correspond to a syntactic structure in which the embedded element(s) are F-marked, but the VP itself is not. Those generate *∃x∃y. praise(x)(y)*, *∃R∃x∃y. R(x)(y)*, and *∃R∃x. R(Helen)(y)*, respectively. As can be deduced from the tableau, (23c-e) won't be able to be used for *∃P∃x. P(x)*, since there are competing pairs with no violations of Avoid Ambiguity. The two relevant pairs, *<praised HELEN, ∃P∃x. P(x)>* and *<PRAISED HELEN, ∃P∃x. P(x)>*, are both optimal since they are equally ranked.

(23)

			Avoid Ambiguity		
a.	praised HELEN	✓	-	-	–
b.	PRAISED HELEN	✓	-	-	-
c.	praised || HELEN	*	✓*	-	-
d.	PRAISED || HELEN	*	-	✓*	-
e.	PRAISED || Helen	*	–	-	✓*
		∃P∃x.P(x)	∃x∃y.praised(x)(y)	∃R∃x∃y.R(x)(y)	∃R∃x.R(Helen)(x)

[49] Crucially, *PRAISED Helen* is not a candidate. This pattern could only stem from (19/20b), after *Helen* has been Prosodically Subordinated to *praised*. The result, however, violates Complement Prominence.

This sketch of an account cannot, at this point, be proposed as a full-fledged analysis. As noted before, the theory of prosodic structure should be modified so that it generates all the prosodic patterns in (23). OT considerations should also be properly integrated in the theory assumed so far.

Nevertheless, the proposal is worth pursuing. The most interesting point of it is that it requires a link between prosodic patterns and Existential F-Closures; Avoid Ambiguity does not consider syntactic representations. Although the link is indirect, and it has to go through syntactic representations to determine the possible Existential F-Closures for each prosodic pattern, one should start thinking whether one could eliminate this extra step; i.e. whether one could build Existential F-Closures based on prosodic patterns alone. This move could potentially eliminate F-marking altogether and allow the two interface components, phonology and meaning, to speak directly to each other, without the mediation of syntax. This line of research has been pursued in the literature, most notably by Reinhart (2006), among many others. As far as I can see, nothing in the theory proposed in this chapter directly contradicts such a move. On the contrary, the move from AvoidF to Maximize Focus Presupposition and the elimination of syntactic rules regulating F-marking point towards that direction. Interesting as the issue is, however, this dissertation cannot pursue it further.[50]

[50] For recent discussion on the architectural issues around F-marking, see Slioussar (2009). There, as in most of the syntactic literature on focus, the issue that is being addressed is the relation between F-marking and movement phenomena that are sensitive to information-structural considerations. Two main approaches have been proposed to account for such movement phenomena; *cartographic* approaches, as in Rizzi (1997), assume that movement is the result of features hosted by particular functional projections in the left-periphery of the clause. Movement, then, is movement to those functional projections. *Interface* approaches assume that movement is triggered/ licensed by requirements of the interface, as in, e.g., Neeleman and Reinhart (1998), Szendöi (2001), Wagner (2005), Kucerova (2007), Slioussar (2009), among others . In, e.g., Wagner (2005) movement is triggered by the need to license his version of Givenness (see section 4.3.2.2 for a short discussion and arguments that Wagner's particular approach cannot account for the behaviour of pronominal anaphors). As far as I can see, nothing I say in this dissertation forces me to adopt one or the other position. Notice that the use of F-features here is different than the use of F-features in cartographic approaches. F-features here are not syntactically active, and their only purpose is to build Existential F-Closures.

2.6.2 Wagner (2005)

The system I have been building is based largely on the system of Wagner (2005). I adopted Wagner's recursive model of prosodic structure, but modified his view on how informational structural factors interact with it. Whereas Wagner develops a system using G- rather than F-marking, I opted for the latter. This has several consequences, the most crucial one being the adoption of Cyclic Domains. Wagner also proposes to strengthen the conditions of Givenness licensing so that they make crucial reference to the sister-constituent of the one being evaluated. This was also dropped. In this section, I briefly present Wagner's system and discuss my choices in more detail.

2.6.2.1 G-marking

In Wagner's (2005) system Givenness is syntactically encoded on syntactic structures. This is not done by the use of F(ocus)-features, however, but by the use of G(iveness)-features.[51] G-features are akin to focus interpretation operators, like Rooth's squiggle, ~, in section 2.5.1. They attach to a constituent and pose certain presuppositional requirements on it. Following Schwarzschild (1999), the relevant presupposition should be that the constituent G attaches to is Given.[52]

(24) $[\![\mathrm{G}]\!] = \lambda\mathscr{P}.\ \exists\mathscr{P}\in \mathrm{D}_{\mathscr{P}}:\ \mathscr{P}$ is Given. $\mathscr{P}$

Wagner proposes to strengthen the presupposition of G-marking, to that in (25).

(25) *Relative Givenness*
$[\![\mathrm{G_R}]\!] = \lambda\mathscr{P}\lambda\mathscr{S}.\ \exists\mathscr{S}'\in \mathrm{Alt}(\mathscr{S}):\ [\![\mathscr{S}'\mathscr{P}]\!]$ is Given. $[\![\mathscr{S}\mathscr{P}]\!]$

Relative Givenness requires that the constituent is given *relative to its sister-constituent*. Evaluating the status of some constituent, then, always requires taking into account its sister constituent. I discuss the consequences of this in section 2.6.2.3.

Since G is presuppositional, Maximize Presupposition ensures that it will be used when possible. In other words, G-marking is obligatory. So, all attachments sites for

[51] Other authors that use G- instead of F-marking are Sauerland (2005) and Kucerova (2007).

[52] $\mathscr{P}$ is a meta-variable over variables of different types, since G should be able to attach to constituents of any type.

G will be checked, and G will be attached every time its presuppositions are met. The effects of Given Domains follow, then, without the need to add such a principle explicitly.

To illustrate, consider the simple example in (26). The first cycle is at the level of the VP. Within the VP, *Helen* will be G-marked, but *praised* will not be. This is shown in (27). To capture the prosody of the VP, a principle is needed that forces G-marked material to subordinate to non-G-marked material. This is the principle of Focus Prominence, tailored to suit G-marking. Wagner's original formulation of Focus Prominence is given in (28).[53] The only way to satisfy (28) is to apply Prosodic Subordination; *Helen* will be subordinated to *praised*, deriving the stress pattern in (26B). [54]

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[53] The constituent "relative to which [something] is marked given" is always the sister constituent. This follows from Wagner's strengthening of the Givenness condition. See the next section for discussion.

[54] I will not proceed to a full exposition of a system using G-marking here. Büring (2008) argues that double-focus examples like the one in (ia) are incompatible with G-marking. Neither *praised* nor *Helen* will be G-marked, since they are both new. If so, Complement Prominence will be the only relevant principle that regulates the prosodic structure of the VP. This, however, would allow *praised* to remain unaccented, which is not possible. In other words, G-marking does not give us the tools to distinguish between (ia) and (ib). See Büring (2008, 18-19) for more detailed discussion that also takes into account Wagner's strengthening of Givenness.

(i) a. A: Bill dissed Mary. b. A: What did Bill do?
B1: Bill PRAISED HELEN. B: Bill praised/ PRAISED HELEN.
B2: Bill praised HELEN.#

Our theory dealt with (ia) by introducing a new principle, Focus Projection, that forced F-marked material to project to the top grid line. Focus Projection was also responsible for distinguishing between the accent patterns of (iiB) and (iiib) (see section 2.4.3.2.1). I cannot see how a theory using G-marking could deal with this difference. At the VP level, Complement Prominence (applied in (iiB)) and (28) (applied in (iiiB)) both lead to Prosodic Subordination of *praised* to *Helen*. Focus Projection solved the issue by forcing *Helen* to project to the top grid line at the next level. I cannot see a way to replicate the effects of Focus Projection in a system using G-marking.

(ii) A: John praised Helen. (iii) A: John praised Mary.
B: No, BILL praised HELEN. B: No, BILL praised HELEN.

(26) A: Bill dissed Helen.
B: No, Bill PRAISED Helen.
(27) [$_{VP}$ praised Helen$_{G}$]
(28) A Given constituent is less prominent than the constituent relative to which it is marked given.

2.6.2.2 G-marking and Cyclic Domains

Wagner's system is challenged by the facts that motivated Cyclic Domains. In this section I only discuss the cases of deaccented new material. The crucial example was the one in (29). As was argued before, deaccenting *Bill* is incompatible with the principle of Given Domains. I solved this problem by adopting Cyclic Domains in (30). Cyclic Domains does not require *Bill* to be Given; it only requires that *Bill's mother* is Given. This can be done without the need of F-marking. If so, Complement Prominence determines the prosody of the DP and allows *Bill* to be deaccented (actually, not to be subordinated to *mother*).

(29) (in a context where John and Bill have the same mother)
A: Sam called John's mother.
B: No, PETER called Bill's mother. (?)
(30) *Cyclic Givenness*
Cyclic nodes are Given.

Wagner's system derives the structure in (31), for *[$_{DP}$ Bill's mother]* in (29B). *mother* will be G-marked, since the presuppositions of relative Givenness are satisfied; there is an alternative to *Bill*, namely *John*, such that *John's mother* is Given. *Bill* will not be G-marked, since the presupposition is not satisfied. Since one element is G-marked and the other is not, (28) will apply and derive the pattern in (32). This is the wrong prediction.

(31) [$_{DP1}$ [$_{DP2}$ Bill] 's [$_{NP}$ mother]$_{G}$]
(32) BILL's mother

The next question is whether it is possible to supplement the system with Cyclic Givenness in order to derive (29B). Adopting Cyclic Givenness as it stands would contradict Maximize Presupposition. It is possible, however, to adopt (33), below. Cyclic Attachments stipulates that cyclic nodes are the only possible attachment sites for the G-operator. This has the desired effect for *Bill's mother* neither of the two elements can be G-marked (although the full DP might be). If so, Complement Prominence applies deriving the correct pattern.

(33) *Cyclic Attachment*
The G-operator can only attach on cyclic nodes.

(34) [$_{DP1}$ [$_{DP2}$ Bill] ‘s [$_{NP}$ mum]]

It is obvious, however, that Cyclic Attachment massively undergenerates. It follows directly from Cyclic Attachment that the prosody of (at least the first) cycle will always be determined by Complement Prominence. This is so, since terminal nodes are not cyclic nodes. But even if this were not the case, in a system using G-marking, G-marking one of the constituents embedded within the cyclic node does not affect the Givenness status of the cyclic node itself. To illustrate, consider again example (24). Given Cyclic Attachment, the first node evaluated for Givenness is *[$_{VP}$ praised Helen]*. G-marking the whole VP is not possible (*[$_{VP}$ praised Helen]$_{G}$*) since the presuppositions of G-marking are not met. *Bill* and *mother* are not and cannot be G-marked. If so, Complement Prominence should apply and generate one of the patterns in (35). This is the wrong prediction.

(35) a. praised HELEN b. PRAISED HELEN

2.6.2.3 Relative Givenness

This section discusses the data that Wagner presents to support the strengthening of the presuppositions of Givenness. Section 2.6.2.3.1 presents Wagner’s solution in terms of Relative Givenness. Section 2.6.2.3.2 discusses an alternative.

2.6.2.3.1 Relative Givenness and G-marking

Wagner (2005, 248) presents the data in (36) to argue that Relative Givenness is empirically driven. Büring (2008, 10) tested similar examples and found similar judgments; he reports that half his speakers preferred the pattern (parallel to the one) in B1 compared to the regular pattern, e.g., *CHEAP CONVERTIBLE*. Less of a third of his speakers accepted the pattern in B2 and all accepted the one in B3.

(36) A: Mary’s uncle, who produces high-end convertibles, is coming to her wedding. I wonder what he brought as a present.
B1: He brought a CHEAP convertible.
B2: He brought a RED convertible. #
B3: He brought a RED CONVERTIBLE.

Consider, first, the DP *[a cheap convertible]* in the felicitous response in (36B1). The prosodic pattern *CHEAP convertible* can only be derived in Wagner’s system, if *convertible* is G-marked, and *cheap* is not. *cheap* obviously does not satisfy Relative

Givenness, so it cannot be G-marked. What about *convertible*? Relative Givenness will be satisfied if there exists an alternative *y* to *cheap*, such that *y convertible* is Given. *high-end convertible* is the only candidate. Satisfaction of Relative Givenness, then, boils down to the question whether *high-end* is an alternative to *cheap*. Wagner claims that this is indeed so, and the reasoning is intuitive enough; *high-end* and *cheap* are mutually exclusive; if something is high-end it cannot be cheap, and the other way around.

Exactly parallel considerations apply to the DP *[a red convertible]* in (36B2). *red* cannot be G-marked. *convertible* will be G-marked if there exists an alternative *y* to *red*, such that *y convertible* is Given. *high-end convertible* is the only candidate. Satisfaction of Relative Givenness, then, boils down to the question whether *high-end* is an alternative to *red*. Wagner claims that it is not, and the reasoning is intuitive enough; *high-end* and *red* are not mutually exclusive; claiming that something is high-end does not mean that it is not necessarily red.[55] If so, there is no G-marking within the DP, and the only prosodic pattern that can be generated is the one (36B3).

Notice that a system that uses G-marking but does not strengthen its presuppositions to Relative Givenness, cannot distinguish between (36B1) and (36B2). Consider *cheap convertible* in (36B1). Like above, *cheap* is not Given and cannot be G-marked. *convertible* will be G-marked if there exists an antecedent such that the Existential Closure of the antecedent entails the Existential Closure of *convertible*. *convertibles* in (36A) is a suitable antecedent. *convertible*, then, will be G-marked. Since *convertible* is G-marked but *cheap* is not, the system correctly predicts the prosodic pattern *CHEAP convertible*. The problem is that the same should happen in the case of *red convertible* in (36B2/3). *red* is not Given, but *convertible* is, for the same reason as in the case of (36B1). But the only way to derive the correct prosodic pattern in the system is if both *red* and *convertible* carry no G-markers. It is Relative Givenness, then, that allows Wagner not to G-mark *convertible*, because *high-end* is not a contrasting alternative to *red*.

2.6.2.2.2 Local contrast and Cyclic Givenness

In this section, I will consider the data in (36) within the theory argued for here, i.e. a theory that adopts Cyclic Domains, but not Relative Givenness. Let us start again with the felicitous response in (36B1). I argued in section 2.4.3.3.2, that complex DPs are cyclic domains. The DP *[a cheap convertible]* is, thus, a cyclic node that is

[55] See Büring (2008, 14) for an attempt to formally define the notion of 'contrasting alternative'. Büring uses the same intuition of mutual excludability.

required to be Given. F-marking the adjective is enough to make the DP Given. At the next cycle, the VP, Givenness requires the DP itself to be F-marked. No further, F-marking is required. The result is the syntactic structure in (37). The F-marking in (37) predicts that *cheap* will bear the most prominent accent in the sentence, as is the case.

(37) $[_S$ he brought [a $[_{AP}$ cheap$_F$] convertible]$_F$]

Exactly parallel considerations lead to the syntactic structure in (38) for (36B2). As mentioned before, F-marking *red* is enough to make the DP Given, since the Existential Closure of *high-end convertible* entails $\exists P \exists x.\ P(x)\ \&\ convertible(x)$. Moreover, not F-marking *red*, as in arguably the case in (36B3) should be a violation of Economy. The theory, then, makes the wrong prediction for both (36B2) and (36B3).

(38) $[_S$ he brought [a $[_{AP}$ red$_F$] convertible]$_F$]

I want to suggest that examples like (36) are, in fact, more complicated than the literature has assumed so far. The first point to be made towards that end is that Speaker A's utterance creates an expectation that the uncle did, indeed, bring a high-end convertible. Speaker B's response, then, seems to correct that expectation.[56] I suggest, then, that (36) is a case of an accommodated antecedent, similar to the cases seen in section 2.4.3.3.1. The accommodated antecedent is an alternative answer to Speaker A's question, and should be, roughly, as in (39).

(39) He brought a high-end convertible.

Let's consider the answers in (36), again, considering the antecedent in (39). The only difference in terms of F-marking for (36B1/2) will be that there is no need for F-marking the DP at the level of the VP-cycle. The resulting syntactic structure for, e.g., (36B1) is shown in (40).

(40) $[_S$ he brought a $[_{AP}$ cheap/ red$]_F$ convertible]

The next thing to consider is what exactly is the rhetorical relation between (39), the antecedent, and (40). As mentioned above, (39) is accommodated because it is a prominent expectation given A's utterance. The response corrects this expectation. I

[56] The same is true for the contexts used in Büring (2008).

will indicate this by including an implicit *No* in the responses. The relevant context for (36B1), then, is shown in (41).

(41) A: Mary's uncle brought a high-end convertible.
B: (No,) he brought a CHEAP convertible.

What is the status of such corrections? Speaking in terms of information update, (41B) rejects A's utterance, as an update of the common ground, by the use of *No*, and, in turn, proposes to update with a claim of his own. The rhetoric of such discourses, however, is more complicated. Speaker B's claim is, normally, considered to be not only an alternative proposal to update the common ground, but, in addition, it is understood to be an *explanation* for why Speaker A's claim is untenable. What Speaker B says in (41), then, is that Mary's uncle couldn't have brought a high-end convertible, because he actually brought a cheap convertible. Speaker B's reasoning goes, through, since high-end and cheap are mutually exclusive.

Consider, next, (36B2) in the mini-discourse in (42). F-marking will be as indicated already in (40). I suggest that the infelicity of (42) (and (36B2)) has nothing to do with F-marking, but is rather the result of the rhetorical relation established between the utterance and its antecedent. (42B) is a bad correction, because its claim cannot explain the rejection of the claim in (42A). What Speaker B says in (42) is that Mary's uncle couldn't have brought a high-end convertible, because he actually brought a red convertible. Speaker B's reasoning does not go through, since high-end and red are not mutually exclusive; bringing a red convertible does not exclude the possibility that that same convertible was also high-end.

(42) A: Mary's uncle brought a high-end convertible.
B: (No,) he brought a RED convertible. #

The question that arises now is why (36B2) is not felicitous under the F-marking in (38). That F-marking disregards the accommodated antecedent. The reason behind that is that accommodation is not easy to escape in such cases. Since the accommodated proposition is very salient, by-passing it will need to be visible. The problem with using (38) for that is that it has the same accent pattern as (40). In other words, the accent pattern in (36B2)/ (42B) does not unambiguously indicate its antecedent. This is where (36B3) comes in, which has the syntactic representation in (43). (43) could not have been used in the context of (42), not only because it would be a bad correction, like (42B), but also because it would violate Economy (since (40)

is possible in the same environment). (43) can only be felicitous if its antecedent is taken to be Speaker A's question *'I wonder what he brought as a present'*. In other words, if the previous information is disregarded, and by doing so, the possibility of accommodating the antecedent in (39) is disregarded. Indeed, (36B3) makes no commitment on whether the convertible brought by the uncle was high-end or not.

(43) $[_S$ he brought [a red convertible]$_F]$

In order to explain the infelicity of (36B2) I used the intuition that Wagner (and Büring) used to define the notion of 'contrasting alternative'; two terms are contrasting alternatives if they are mutually exclusive. The difference between the treatment here and the Wagner/ Büring account is that the later ties the triggering of the relevant reasoning with focus, whereas the former does not; issues of mutual excludability are the result of certain rhetorical relations that are established in the discourse and are not necessarily linked to focus. This makes the prediction that accenting *red* in examples where its antecedent is *high-end*, will be felicitous if those rhetorical circumstances do not arise. (44) is a first attempt to create those circumstances. The rhetorical relation between the target utterance and its antecedent is not one of correction, but of concession.

(44) A: I ordered everyone to bring a high-end convertible. What did John bring?
B1: He obeyed: he brought a RED convertible. ??
B2: He obeyed: he brought a RED CONVERTIBLE.

Although the judgment is not as clear as with (36B2), (44B1) is still odd. Taking into account the exhaustification implicatures of focus might explain the oddness. The relevant syntactic structure for (44B1) is the one in (45), which is possible if the proposition in (46) has been accommodated and acts as antecedent. But consider the strengthened meaning of (45) in (47). (47) leads to a violation of the Mismatch Hypothesis, since Speaker B has accepted that John brought a high-end convertible. (44B1) is odd, then, because its strengthened meaning clashes with the rhetorical relation it establishes with its antecedent.

(45) $[_S$ he brought a $[_{AP}$ red$]_F$ convertible]
(46) John brought a high-end convertible.
(47) John brought a red convertible and he did not bring a high-end convertible.

Luckily, there do exist examples where both accommodation and rhetorical

relations seem to be irrelevant. Rooth (1992) discusses cases where a noun phrase finds its antecedent for focus licensing within the same utterance, as in (48). Contrasting *red* and *high-end* in such environments is felicitous, as shown in (49B1).[57] (49B2) is also felicitous. Why is this so? The F-marking corresponding to (49B1) (*a* $[_{AP}$ *red*$]_F$ *convertible*) implies that the second convertible is red but not high-end. F-marking the whole DP, as in (49B2), allows the speaker not to commit to such an implication.

(48) An AMERICAN farmer was talking to a CANADIAN farmer.

(49) (While watching a race)
A: Did I miss anything?
B1: A high-end convertible just overtook a RED convertible.
B2: A high-end convertible just overtook a RED CONVERTIBLE.

2.6.3 Büring (2008)

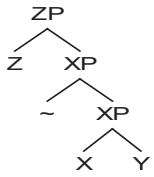
Büring (2008) already argues that Schwarzschild's (1999) *Given Domains* cannot be correct, and that the theory should not require *every* constituent to be Given. He notices that theories that use F-marking cannot predict (36B3) without violating *Given Domains*; if every constituent was required to be Given, *red* in (36B3) would have to be F-marked, and *convertible* not. All theories of F-to-accent mapping predict, then, that *convertible* should subordinate to *red*, which is not the case.

As a response to this challenge, Büring builds a theory that does not require every constituent to be Given. This immediately raises the question of how focus domains are to be determined. In the theory argued for here, I answered the question by linking focus domains to cyclic nodes, which are independently established in Wagner's prosodic system using the Associativity Law. Büring's response is quite different; as in Wagner's G-marking system above, he proposes that focus domains are determined by the economy principle. So, Economy not only regulates F-marking, but it also regulates focus domains. Here is how he sets things up. To clarify the notation, Büring marks focus domains by adjoining a ~ ('squiggle') to an expression. So, in (50), below, XP is a focus domain, whereas Z is outside of that focus domain. Since XP is a focus domain it must be Given.[58]

[57] The prosody of *[a high-end convertible]* does not affect the judgment.

[58] Büring uses MATCH in (i), a Roothian version of Givenness. Later in the paper, he adopts Contrast, in (ii), in response to the data in (36). Contrast is Büring's F-marking version of Relative Givenness.

(50)



Büring defines the notion of Anaphoric Constituent relative to a focus domain, and builds the relevant economy principle, Maximize Anaphoricity, on a generalization of that notion.

(51) *Anaphoric Constituent (in a focus domain)*
A constituent C within a focus domain D is anaphoric if it neither bears, nor is dominated by, an F-marker in D.

(52) *Anaphoric Constituent*
A constituent C within a phrase marker S is anaphoric if it is anaphoric in a focus domain within S.

(53) *Maximize Anaphoricity*
Maximize the number of Anaphoric Constituents in a sentence, while respecting Givenness.

Maximize Anaphoricity forces fewer F-markers (since F-marked constituents cannot be Anaphoric Constituents), and more and wider focus domains (since constituents outside of focus domains cannot be Anaphoric Constituents).

For illustration, consider the example in (54), and the two possible structures in (55). (55a) corresponds to (54B1) and (55b) corresponds to (54B2).[59] Even though

---

(i) *MATCH*
For each focus domain D, there is some element M in the Focus Semantic Value of D which is a salient meaning in the discourse.

(ii) *CONTRAST*
A structure of the form *[A_F B]* is well-formed if there is a contrasting alternative A* to A such that 'A*B' entails the Existential F-Closure of *[A_F B]*.

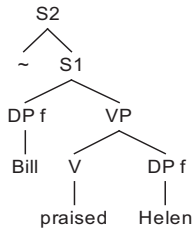
[59] Büring assumes the simplified F-to-Accent Mapping in (i). As it will become apparent shortly, elements outside of focus domains should not bear pitch accents.

(i) *F-to-Accent Mapping*
a. within a focus domain, a node dominated by F is stronger (no weaker) than any node dominated by F.
b. otherwise, apply default prosody.

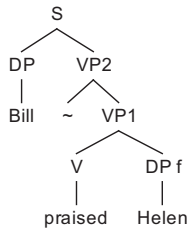
the focus domains are licensed in both structures, since the sisters of the squiggle are Given, only (55a) is licensed. This is so because (55a) has three Anaphoric Constituents (*S1, VP, V*), whereas (55b) only has two (*VP, V*). Maximize Anaphoricity blocks (55b).

(54) A: John praised Mary.
B1: BILL praised HELEN.
B2: Bill praised HELEN.

(55) a.



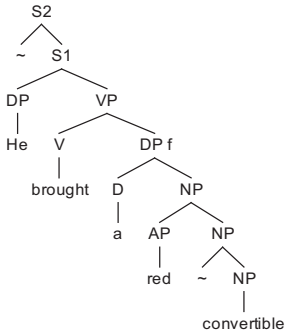
b.



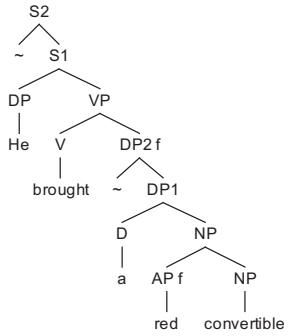
As for (36B2/3), Maximize Anaphoricity predicts the structure in (56a).[60,61] (56b), that would correspond to the accent pattern in (36B2) and contains more Anaphoric Constituents, is ruled out as in Wagner; it violates Contrast, since *red* and *high-end* are not alternatives.

(55)

a.



b.



Unlike Wagner's system, Büring succeeds with examples of deaccented new material. The example I considered was the one in (29), repeated below in (56). The structure that maximizes the number of Anaphoric Constituents is the one in (57), that correctly corresponds to the prosody in (56B). (57b) is blocked, since *Bill* is not

[60] Büring does not consider the possibility of accommodating an antecedent.

[61] A question arises as to whether *~convertible* meets Contrast. It might need to be ensured that focus domains that only contain a single element are subject to the weaker condition, MATCH.

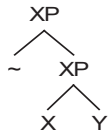
an Anaphoric Constituent in this structure.[62] The prediction is correct for (56).

(56) (in a context where John and Bill have the same mother)
A: Sam called John's mother.
B: No, PETER called Bill's mother. (?)

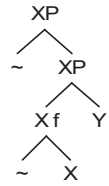
(57) a. $[_{S2}$ ~ $[_{S1}$ $[_{DP}$ Peter$]_F$ called Bill's mother$]]$
b. $[_{S2}$ ~ $[_{S1}$ $[_{DP}$ Peter$]_F$ called $[_{DP}$ Bill$]_F$'s mother$]]$

Büring's system is empirically successful and manages to derive the basic intuition behind Cyclic Domains in a principled way; the distribution of focus domains and F-features is determined by a single principle, the economy principle. The specific implementation in terms of Anaphoric Constituents and Maximize Anaphoricity, however, might still overgenerate in some cases. A consequence of how the system is set up is that one can keep the number of Anaphoric Constituents constant by adding new F-markers and creating new focus domains within the F-marked constituents. To illustrate, consider the structures in (58). As long as Givenness is satisfied, (58a) and (58b) are equivalent; they have the same number of Anaphoric Constituents. The two structures correspond to different accent patterns; in (58a), 'default prosody' applies, in (58b) *X* is stronger than *Y*. The theory predicts that both patterns are available.

(58) a.



b.



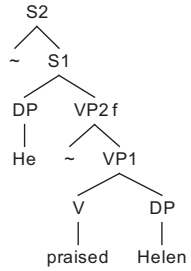
One of the situations where the issue arises are examples with constituents containing all-Given elements, as in (59). Maximize Anaphoricity predicts both structures in (60) to be possible, since they contain the same number of Anaphoric Constituents. (60a) corresponds to (59B1), and (60b) to (59B2). (59B2) is infelicitous, however.

(59) A: I asked everyone to praise Helen. What did Bill do?
B1: He praised/ PRAISED HELEN.
B2: He PRAISED Helen. #

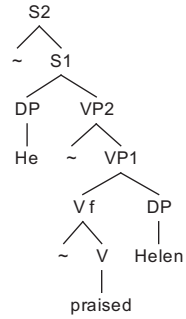
[62] Even though counting *Bill* as an Anaphoric Constituent strikes me as counter-intuitive, the prediction of the theory is still correct.

(60)

a.



b.



It remains to be seen whether factoring in Avoid Ambiguity, as in section 2.6.1.3.2, could neutralize the problem for Büring's system, in all the cases where it arises. I will not pursue this here.

2.7 Conclusions

This chapter argued for a focus theory along the lines of Schwarzschild (1999), i.e. a theory that uses the notion of *Givenness* and requires an economy principle to choose between competing syntactic representations. I assumed that F-marking is syntactically unrestricted and used a modification of Wagner's (2005) recursive model of prosody assignment to implement the mapping to phonological form. The adoption of Wagner's system allowed the basic innovation proposed here, the move from Schwarzschild's *Given Domains* to the principle below.

(1) *Cyclic Domains*
Cyclic nodes must be Given.

Cyclic Domains allowed us to accommodate some new facts that challenged the correlation between accent placement and *Givenness/ Novelty*, as understood in systems using *Given Domains*. More specifically, it allowed us to explain cases in which New material remain unaccented, and cases in which Given material receive pitch accents.

The theory has non-trivial consequences for the interaction of pronominal elements with accent, since it follows that the factors that determine the prosody of such elements must be different than those determining the prosody of Given referential DPs. This is the issue I turn to in the next two chapters; Chapter 3 discusses the prosody of reflexive anaphors and Chapter 4 discusses the prosody of

pronominal anaphors.

Chapter 3

FOCUS ON REFLEXIVE ANAPHORS

This chapter compares three theories of reflexive anaphors and argues that reflexives should be treated as reflexivizing functions rather than variables. Reflexive anaphors have been argued to i. be translated into variables that can be either bound or remain free, ii. be translated into variables that have to be bound, and iii. be reflexivizing functions. Using the focus theory defended in the previous chapter, the three theories are tested against the distribution of stress in examples containing reflexive anaphors. The full pattern of distribution of stress in both examples in which prosody is determined by F-marking and examples in which prosody is determined by purely structural factors can only be captured by a theory that builds the binding requirement into the lexical semantics of reflexive anaphors. It is shown how such a theory still captures the exhaustification implicatures of focused reflexive anaphors. Evidence from Greek reflexive anaphors show that not all reflexive anaphors can be treated as reflexivizing functions.

3.1 Introduction

The basic division of anaphoric elements has traditionally been the one between pronouns and reflexives, as in, e.g., Chomsky 1980. Pronominal anaphors, like English *her*, can have discourse anaphoric readings, as in (1), and are subject to an anti-locality condition that requires that antecedents keep a sufficient distance from the pronoun they antecede, where "distance" is properly defined in some syntactic or semantic way, usually in terms of sentences or co-argumenthood. These "Principle B" effects are shown in (2).

(1) Lucie came in the room. Oscar talked to her.

(2) a. Lucie hates her. * *her* = *Lucie*
b. Lucie thinks Oscar hates her. ✓ *her* = *Lucie*

On the other hand, reflexive anaphors, like English *herself*, show the opposite behavior. They do not allow discourse anaphoric readings, as shown in (3), and are subject to a locality condition that requires that sentence internal antecedents are

sufficiently close to the reflexives they antecede, where “close” is properly defined in some syntactic or semantic way, usually the complement of the definition of “distance” for pronouns. These “Principle A” effects are shown in (4).

(3) Lucie came in the room. * Oscar talked to herself.

(4) a. Lucie hates herself. ✓ *herself* = *Lucie*
b. Lucie thinks Oscar hates herself. ∗ *herself* = *Lucie*

The inspection of languages other than English has shown that the division above is too poor to capture the range of anaphoric systems across languages. In their influential typology of anaphoric elements Reinhart and Reuland (1993) distinguish between at least three types of anaphoric expressions, *pronouns*, *self-anaphors*, and *se-anaphors*. Whereas English only realizes the first two types, pronouns (*her*) and self-anaphors (*herself*), languages like, e.g., Dutch realize all three types: pronouns (*haar*), self-anaphors (*zichzelf*) and se-anaphors (*zich*).

In this chapter I will only consider reflexive anaphors, or self-anaphors in Reinhart and Reuland’s typology, focusing on English *herself*. The aim of the chapter is to examine what accent placement can tell us about the semantics of such elements. The prosody of reflexives is not rigid. In an out-of-the-blue context as in (5), reflexives appear to subordinate to the predicate. *Zelda* and *praised* both receive pitch accents, with *praised* being the most prominent one, since it is the last element.

(5) ZELDA PRAISED herself.

Reflexives can (and have to) receive pitch accents in environments like the one in example (6). But not when *Oscar* in (6A) is replaced with a reflexive anaphor, as in (7).

(6) A: Lucie praised Oscar.
B1: No, ZELDA praised herSELF.
B2: No, ZELDA praised herself. #

(7) A: Lucie praised herself.
B1: No, ZELDA praised herSELF. #
B2: No, ZELDA praised herself.

The main aim of this chapter is to determine what are the minimal assumptions one needs to make about the semantics (and syntax) of reflexive anaphors in order to derive the pattern in (5)-(7) and similar data. I compare three prominent analyses for the semantics of reflexive anaphors that have been proposed in the literature. The first two theories are different versions of the same insight, that reflexives are

translated into variables The third theory treats reflexives as reflexivizing functions. I conclude that the third theory is empirically superior than any of the variable-theories.

The chapter is organized as follows. Section 3.2 presents the three competing theories of reflexive anaphors. Section 3.3 summarizes the Focus Theory argued for in the previous chapter, focusing on some key examples that will be relevant in the next sections. Section 3.4 compares the theories on the basis of examples where Focus Prominence determines accent placement. Section 3.5 compares them on the basis of examples in which Complement Prominence applies. Section 3.6 shows that the results of section 3.4 are not dependent on the adoption Cyclic Domains. Section 3.7 discusses how the third theory can capture the exhaustification implicatures of stressed reflexives. Section 3.8 discusses two further issues that arise in the third theory; the treatment of ditransitives, and the possibility of decomposing reflexive anaphors. Section 3.9 argues that Greek reflexive anaphors cannot be treated like their English counterparts. Section 3.10 concludes.

3.2 Three theories of reflexive anaphors

This section presents three theories for the semantics of reflexive anaphors. The first two are variants of each other. Both theories treat reflexives as logical variables, but differ in how they force the coreferential interpretation; the first theory uses a pragmatic competition approach in which reflexives compete with pronouns and the second theory uses a syntactic constraint that forces reflexives to be bound. The third theory builds the binding requirement in the lexical semantics of the anaphor, treating it as a reflexivizing function.[63]

3.2.1 Theory 1: Reflexive anaphors are variables

3.2.1.1 Binding and coreference

Theory 1 interprets reflexive and pronominal anaphors like variables in predicate logic. This has been a standard treatment of the semantics of anaphors in natural

[63] The main objective is to derive the basic property of reflexive anaphors in direct object positions of transitive verbs, i.e. that they lead to obligatory reflexive interpretations (i.e. interpretations in which two co-arguments have the same value). See the Appendix for a short discussion of other uses of reflexive anaphors.

language semantics. Complete formal systems are explicated in, e.g., Heim and Kratzer (1998) and Büring (2005). I adopt here a version of the indexing system of Büring (2005). Variables in predicate logic are assigned a value by an assignment. Likewise, the interpretation of anaphors in natural language is dependent on an assignment function *g*; reflexive and pronominal anaphors do not directly refer to individuals, but receive their value by the assignment. The assignment *g* is a function from numbers to individuals, those individuals that have been introduced in a certain context. To be able to link anaphors with those individuals, anaphors are endowed with a numerical index. The Anaphor Rule in (1) assigns to an anaphor bearing index n, the individual corresponding to the n-th place in the assignment function.

(1) *Anaphor Rule*
$[\![\text{herself}_1]\!]^g = [\![\text{her}_1]\!]^g = g(1)$

In the case of, e.g., (2), *her* will refer to Zelda under the assignment in (3a), and to Lucie under the assignment in (3b). So, sentences correspond to formulas that only get a constant interpretation relative to a specific assignment function. This is done by augmenting the interpretation function [[ ]] with the assignment function, as in, e.g., (1').

(2) Oscar praised her_1.
(3) a. 1 → Zelda, 2 → Lucie, 3 → Max
b. 1 → Lucie, 2 → Max, 3 → Zelda

If *g* is the function in (3a), the sentence denotes the proposition that Oscar praised Zelda, as in (4). Similarly for other constituents, e.g., the VP *praised her* in (5).

(4) $[\![\text{Oscar praised her}_1]\!]^g$ = Oscar praised g(1) = Oscar praised Zelda
(5) $[\![\text{praised her}_1]\!]^g = \lambda x.$ praised (g(1))(x) = $\lambda x.$ praised (Zelda)(x)

In the structure in (2), the name *Oscar* was left unindexed. Let's assume that, next to anaphors, all names and referential DPs are indexed. If so, they too will be interpreted relative to the assignment function. The name, or descriptive content of the DP, will then be treated as presuppositions, as in (6).[64]

(6) a. $[\![\text{Oscar}_1]\!]^g$ = g(1), if g(1) = Oscar, otherwise undefined
b. $[\![\text{the actress}_1]\!]^g$ = g(1), if actress(g(1)), otherwise undefined

[64] I assume a truth-value gap theory of presuppositions, where the conditions under which some constituent has a denotation characterize the content of what it presupposes.

Indexing proper names and other referential DPs allows the system to straightforwardly capture instances of *coreference*. Two DPs will be coreferent (i.e. refer to the same individual) if they are co-indexed. *Zelda* and *her* are coreferent in (7a), but not necessarily so in (7b).[65]

(7) a. Zelda$_1$ said that Oscar annoys her$_1$.
b. Zelda$_1$ said that Oscar annoys her$_2$.

Not all DPs can enter coreference relations with anaphors, however. Consider the example of a quantificational DP in (8); if co-indexed DPs are assigned the same denotation, (8) is expected to have the same meaning as (9). This is clearly not the case.

(8) Every actress$_1$, said that Oscar annoys her$_1$.
(9) Every actress said that Oscar annoys every actress.

In fact, quantificational DPs do not refer to begin with. The meaning of simple sentences like (8) is not sensitive to the assignment function at all. (10) is true iff the set of actresses is a proper subset of the set of ambitious individuals. The two relevant sets are provided by the common noun inside the quantificational DP, and the VP. The quantificational determiner specifies the relation that should hold between the two sets in order for the sentence to be true; in the case of a universal quantifier, the subset relation.

(10) Every actress is ambitious.

In Generalized Quantifier Theory (Barwise and Cooper 1981), the meaning is achieved compositionally by treating quantificational determiners as functions from properties to functions from properties to truth-values, as in (11), and, accordingly, quantificational DPs as functions from properties to truth-values. The meaning of the

[65] (7b) allows what is usual called *accidental coreference*, i.e. it allows that *Zelda* and *her* end up with the same value by virtue of the fact that *g* assigns the same value to 1 and 2. Büring's (2005) prevents accidental coreference by formulating a prohibition against accidental coreference, in (i). Reinhart (1983, and subsequent work) argues that the prohibition is not necessary, if one adopts Rule I.

(i) *Prohibition against accidental coreference*
$[\![S]\!]^g$ is a possible interpretation of a sentence S only if g(m) ≠ g(n), if m≠n, for any natural numbers n,m.

quantificational DP in (8), is the one in (12). The truth-conditions of the sentence are shown in (13).

(11) $[\![\text{every}]\!]^g = \lambda P_{et} \lambda P'_{et}.\ \forall x\text{: } P(x) = 1 \rightarrow P'(x) = 1.$

(12) $[\![\text{every actress}]\!]^g = \lambda P'_{et}.\ \forall x\text{: actress}(x) = 1 \rightarrow P'(x) = 1.$

(13) $[\![\text{every actress is ambitious}]\!]^g = 1 \text{ iff } \forall x\text{: actress}(x) = 1 \rightarrow \text{ambitious}(x) = 1.$

So, even though the interpretation function in (11)-(13) is relativized to the assignment function, *g* never does any work in establishing the meaning of any of the constituents.

If quantificational DPs do not corefer and their meanings are not sensitive to the assignment function, it is reasonable to assume that they are not indexed at all. Still, the interpretation of *her* in (8) is dependent on *every actress*; *her* does not refer to any particular individual but its value covaries with *every actress*. In terms of the semantics of quantificational determiners above, (8) is true iff the set of actresses is a proper subset of the set of individuals that said that Oscar annoys them. To achieve this meaning, the VP *said that Oscar annoys her$_1$* should have the meaning in (14). The meaning that our semantics assign to the VP, however, is the one in (15). The question is how to move from the meaning in (15) to the one in (14).

(14) $[\![[_{VP} \text{ said that Oscar annoys her}_1]\ ]\!]^g = \lambda x.\ \text{said-that-Oscar-annoys } (x)(x)$

(15) $[\![[_{VP} \text{ said that Oscar annoys her}_1]\ ]\!]^g = \lambda x.\ \text{said-that-Oscar-annoys } (g(1))(x)$

To move from (15) to (14) the pronoun *her* must be *bound*; i.e. whereas the value of the pronoun was dependent on the assignment, it should become dependent on the argument slot filled by the quantificational DP. Several implementations of this idea (due to Frege) have been proposed in the literature. I assume that a *binding operator* β_n can be freely adjoined on a VP, as in (16). I follow Büring (2005) in notating VPs with adjoined binding operators with a star.[66]

[66] I have chosen here to allow free adjunction of binding operators. The introduction of binder operators is usually linked to the antecedent DP (in the cases discussed here the subjects), either through movement (see, e.g., Heim and Kratzer 1998), or by some rule that turns the (referential) index of the DP into a binding operator (see, e.g., Büring 2005). I choose free adjunction so that binding construals can be considered locally, before introduction of the subject. Given the conclusion in the previous chapter that verb-object pairs are cycles, our assumption gets rid of several complications when it comes to testing Theories 1 and 2 against the prosodic data in sections 3.4 and 3.5.

(16) $[_{VP^*}\ \beta_n\ [_{VP}\ \ldots\ ]]$

The meaning of structures like (16) is determined by the Binder Index Evaluation Rule in (17), from Büring (2005).

(17) *Binder Index Evaluation Rule*
For any natural number n, $[\![[_{VP^*}\ \beta_n\ [_{VP}\ \ldots\ ]]]\!]^g = \lambda x.\ [\![[_{VP}\ \ldots\ ]]\!]^{g[n \rightarrow x]}$ (x)

The result of attaching a binding operator to a VP is that any pronoun within the VP that is co-indexed with the operator will be interpreted as bound, rather than referential. This is achieved through a manipulation of the assignment function; the VP is no longer interpreted relative to the original assignment, but relative to an assignment whose n-th slot corresponds to the individual *x*. Since *x* also fills the open argument slot, the pronoun ends up being dependent on that slot, as desired.

Assume, then, that a binding operator with index 1 is attached to the VP in (18), as in (19), the structure of the sentence in (8). Applying (17) to VP* in (18) results in (19).

(18) $[_S\ [_{DP}$ every actress$]\ [_{VP^*}\ \beta_1\ [_{VP}$ said that Oscar annoys her$_1]]]$

(19) $[\![[_{VP^*}\ \beta_1\ [_{VP}$ said that Oscar annoys her$_1]]]\!]^g$
$= \lambda y.\ [\![[_{VP}$ said that Oscar annoys her$_1]]\!]^{g[1 \rightarrow x]}$ (y)
$= \lambda y.\ [\lambda x.$ said-that-Oscar-annoys (x)(x)] (y)
$= \lambda y.$ said-that-Oscar-annoys (y)(y)

Given the semantics of *every* in (11), and the meaning of the VP in (19), the truth-conditions of (8) are the ones in (20), as desired.[67]

(20) $[\![$ every actress $[_{VP^*}\ \beta_1\ [_{VP}$ said that Oscar annoys her$_1]]]\!]^g = 1$ iff
$\forall$ x: actress(x) = 1 $\rightarrow$ said-that-Oscar-annoys (x)(x) = 1.

The simple system above also explains the c-command requirement on bound pronouns. Reinhart (1983) was first to note that for binding to take place the bound pronoun must be c-commanded by its antecedent. There are several definitions of c-command since Reinhart (1976). For current purposes I will simply equate the c-

[67] Notice that there is no direct dependency between the bound pronoun and *every actress* in (18). Covariation is the result of the presence of the binding operator and the semantics of the generalized quantifier that takes the relevant predicate as one of its arguments. It might, thus, be somewhat misleading to talk of *every actress* as the 'antecedent' of the bound pronoun. The term is descriptively useful, however, and I will keep using it.

command domain of a syntactic constituent with its sister node and everything that it dominates. Reinhart's observation, then, is that a quantificational DP can only bind a pronoun if that pronoun is dominated by the sister node of the DP. The generalization predicts that examples like (21) and (22), will not have bound interpretations, which is intuitively correct.

(21) The director that praised her likes every actress.
(22) The director that every actress likes praised her.

Consider now the structures in (23) and (24), for (21) and (22) respectively, in which all the possible binding operators have been adjoined. The β_1-operators do not bind the pronouns so, no binding is achieved. The β_2-operators do bind the relevant pronouns, but the predicates they form are not arguments of the universal quantifier. No bound interpretation is, thus, possible, and the c-command requirement follows from the set-up of the system.[68]

(23) [The director that [β_2 praised her$_2$]] [β_1 likes every actress].
(24) [The director that every actress [β_1 likes]] [β_2 praised her$_2$].

So, the meaning in (20) corresponds to a *bound* interpretation of the pronoun, and requires the presence of a co-indexed binding operator. The pronoun in (8) can also be interpreted *referentially*, i.e. it can refer to some contextually relevant individual. In the current system, this comes about in two ways; either there is a binding operator that is contra-indexed to the pronoun, as in (25), or, there is no binding operator, as in (26). In both cases, the pronoun is interpreted relative to the contextual assignment function.[69]

(25) [$_S$ [$_{DP}$ every actress] [$_{VP^*}$ β_2 [$_{VP}$ said that Oscar annoys her$_1$]]]
(26) [$_S$ [$_{DP}$ every actress] [$_{VP}$ said that Oscar annoys her$_1$]]

The structure in (26) corresponds to the meaning in (27). (27) is true if the set of actress is a proper subset of the set of individuals that said that Oscar annoys the individual corresponding to g(1), say Zelda.

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[68] Reinhart (1983) already points out that the c-command requirement should have no independent status in the theory. Heim and Kratzer (1998) derive the c-command requirement through the principle in (50) below. The discussion in main text follows, roughly, the discussion in Büring (2005, Chapter 3).

[69] The former case is a case of vacuous binding. In what follows I will ignore such structures, even though the system still produces them.

(27) $[\![$every actress $[_{VP^*}\ \beta_1\ [_{VP}$ said that Oscar annoys her$_1]]]\!]^g = 1$ iff
$\forall x$: actress(x) = 1 → [λy. said-that-Oscar-annoys (g(1))(y)](x) = 1.

Going back to examples with referential DPs, like (28), it was argued that the dependency of *her* on *Zelda* was derived through co-indexation, as in (29). The system also derives the interpretation using binding, as in (30). Although the VPs in (31) and (32) have very different meanings, the one in (29) denoting the set of individuals who said that Oscar annoys Zelda, and the one in (30) the set of individuals who said that Oscar annoys them, both sentences end up expressing the same proposition, that *Zelda said that Oscar annoys Zelda*.

(28) Zelda said that Oscar annoys her.
(29) Zelda$_1$ said that Oscar annoys her$_1$.
(30) $[_S$ Zelda$_1$ $[_{VP^*}\ \beta_2\ [_{VP}$ said that Oscar annoys her$_2]]]$

Ever since Reinhart (1983), sloppy readings of VP ellipsis, as in (31), and examples with focus sensitive particles, as in (32), have been shown to support this conclusion.[70]

(31) Zelda said that Oscar annoys her, and Lucie did too.
a. Lucie said that Oscar annoys Zelda. *strict*
b. Lucie said that Oscar annoys Lucie. *sloppy*
(32) Only Zelda said that Oscar annoys her.
a. No other person said that Oscar annoys Zelda. *strict*
b. No other person said that Oscar annoys that person. *sloppy*

So, looking at our system from the perspective of the relation between a pronoun and the DP it depends on in a sentence, there are two possible dependencies; in one the two items are co-indexed and are assigned the same value by being interpreted relative to the assignment function. In the other, the interpretation of the anaphor depends on the binding operator that binds it. Let us define this second dependency as in (33).[71]

(33) *Operator Binding (o-binding)*
α *o-binds* β iff i. α is a binding operator
ii. α c-commands β

[70] See the relevant chapters in Heim and Kratzed (1998) and Büring (2005) for overviews.

[71] The dependency in (33) is what Heim and Kratzer (1998) and Büring (2005) call sem(antic)-binding. I prefer the term o-binding since it makes clear that (33) is a *syntactic* dependency.

iii. α is coindexed with β
iv. there is no binding operator γ other than α intervening between α and β such that ii. and iii. hold.

3.2.1.2 Reflexive anaphors

I presented the basic system above using pronouns, rather than reflexives. Theory 1 argues that nothing changes when one consider reflexive anaphors; reflexives have the same range of construals and interpretations as pronouns. Any differences between the two are attributed to pragmatic constraints, and should not affect the way one views the syntax and semantics of anaphora. Since this is so, I will alternatively refer to Theory 1 as the "pragmatic theory".

In the case of referential antecedents, as in (34), the system allows both structures in (35a) and (35b). In (35a), the pronoun is referential, in (35b) it is bound by the binding operator. The VP in (35a) has the meaning in (36a), and that in (35b) the meaning in (36b). After composing the VPs with the subject, both structures lead to the same proposition, *Zelda praised Zelda*. Let us call such interpretations, in which two co-arguments end up with the same value, *reflexive interpretations*, regardless of how they came about compositionally.

(34) Zelda praised herself.
(35) a. $[_S$ Zelda$_1$ $[_{VP}$ praised herself$_1]]]$
b. $[_S$ Zelda$_1$ $[_{VP^*}$ β_2 $[_{VP}$ praised herself$_2]]]$
(36) a. $[\![[_{VP}$ praised herself$_1$ $]\!]^g$ = λx. praised (Zelda)(x)
b. $[\![[_{VP^*}$ β_2 $[_{VP}$ praised herself$_2]]\!]^g$ = λx. praised (x)(x)

An example with a quantificational antecedent can have a reflexive interpretation, given the structure in (37b). The meaning of (37) is the one in (37).

(37) a. Every actress praised herself.
b. $[_S$ every actress $[_{VP^*}$ β_2 $[_{VP}$ praised herself$_2]]]$

(38) $[\![[_S$ every actress $[_{VP^*}$ β_2 $[_{VP}$ praised herself$_2]]\!]^g$ = 1 iff
$\forall$x: actress(x) = 1 → [λy. praised (y)(y)](x) = 1.

The system clearly overgenerates, however, as it does not capture the fact that reflexives are restricted to reflexive interpretations; they generally cannot tolerate antecedents that are not "local enough" ("Principle A effects") or have discourse anaphoric readings. (39) cannot mean that Zelda said that Oscar annoys her, and the reflexive in (40a) cannot refer to any individual other than Zelda. Similarly, (40b) only

allows the reflexive to be bound, not referential.

(39) Zelda said that Oscar annoys herself.
(40) a. Zelda praised herself.
b. Every actress praised herself.

Nothing blocks the structures in (41) and (42) that generate the unavailable readings. The two structures in (41) both end up meaning that Zelda said that Oscar annoys Zelda. (42a) and (42b) correspond to (40a) and (41b), respectively. The reflexives in both are interpreted referentially. Given the assignment in, e.g., (3a), (42a) means that Zelda praised Lucie, and (42b) that every actress praised Lucie. The readings are not available, however.

(41) a. $[_S$ Zelda$_1$ $[_{VP}$ said that Oscar annoys herself$_1]]$
b. $[_S$ Zelda$_1$ $[_{VP^*}$ β_2 $[_{VP}$ said that Oscar annoys herself$_2]]]$
(42) a. $[_S$ Zelda$_1$ $[_{VP}$ praised herself$_2]]]$
b. $[_S$ every actress $[_{VP}$ praised herself$_2]]]$

Roelofsen (2008) claims that one should not worry to amend the system in order to exclude the structures in (41) and (42).[72] Instead, he argues that the fact that reflexives are restricted to reflexive interpretations (i.e. interpretations in which two co-arguments have the same value) is the result of a pragmatic constraint.[73] He proposes the Reflexivity Convention in (43) (Roelofsen (2008, 115), based on Levinson 2000).

(43) *Reflexivity Convention*
If a reflexive interpretation is intended, this is indicated by using a reflexive anaphor.

The Reflexivity Convention describes a division of pragmatic labour according to which reflexives are associated with reflexive interpretations, and pronouns are

[72] Roelofsen does not assume a system with variables and assignment functions. His main aim is actually to develop an alternative to it. Proposing the Reflexivity Convention as an alternative to syntactic principles like Condition A (see the next section), he tries to eliminate an argument in favours of using variables in the syntax. As seen in the main text, adopting the Reflexivity Convention is not restricted to Roelofsen's system.

[73] Here and throughout I make the simplifying assumption that 'local domain' is defined in terms of co-argumenthood. Famous counterexamples in the case of reflexive anaphors are reflexives in adjunct PPs. See Chomsky (1980), Reinhart and Reuland (1993), Reuland (2001, to appear), Büring (2005) among many others, for proposals and overviews.

associated with non-reflexive interpretations. If one thinks of reflexive interpretations as the marked or unusual option, and non-reflexive anaphors are the unmarked or stereotypical option, the division of labour described by (43), falls under the more general pattern described in Horn (1984), according to which marked forms are restricted to marked meanings, and unmarked forms are restricted to unmarked meanings. On the form side, reflexives can be thought as more marked than pronouns in a number of ways; the fact that reflexives seem to include pronoun forms in them being the most obvious one.

The Reflexivity Convention explains the unavailability of (41) and (42). What all the structures have in common is that they lead to non-reflexive interpretations. Using reflexives for non-reflexive interpretations violates the division of labour as regulated by (43). A second consequence of (43) (which is actually Roelofsen's main concern) is that pronouns will not be used for reflexive interpretations ("Principle B effects"). It is well-know that this is the case; example (44) cannot mean that Zelda praised herself.[74]

(44) Zelda praised her.

3.2.2 Theory 2: Reflexive anaphors are designated bound variables

Theory 2 is a variant of Theory 1 according to which reflexive anaphors are designated bound variables. The necessity of reflexive interpretations is achieved by forcing a binding operator to appear in the local domain of the reflexive. Since the principle that achieves that (some version of "Principle A") operates on syntactic representations, I will refer to Theory 2 as "the syntactic theory".

Arguably the most common treatment of the differences between pronominal and reflexive anaphors in the literature on Binding Theory has been to pose syntactic restrictions on their distribution. To start again with pronouns, recall that, as mentioned just above for (44), pronouns cannot tolerate antecedents in their local domain.[75] In the system I have been describing, this prohibition requires to exclude the syntactic representations in (45a) and (45b). Both the referential construal in

[74] As Eric Reuland (p.c.) points out there are languages in which such complementarity is not observed. The Frisian example *Jan waske him* 'John washes him' can have a reflexive interpretation.

[75] It is well-known that this is not true cross-linguistically, as mentioned in the previous footnote.

(45a) and the binding construal in (45b) lead to the undesired interpretation that Zelda praised Zelda.

(45) a. [$_S$ Zelda$_1$ [$_{VP}$ praised her$_1$]]
b. [$_S$ Zelda$_2$ [$_{VP*}$ β_2 [$_{VP}$ praised her$_2$]]]

The aim of the current theory, then, is to formulate syntactic constraints that rule out the representations in (45). There are (at least) three possible ways to achieve that. Notice, first, that, to rule out (45), we need to define some syntactic dependency between *Zelda* and *her*. I call this dependency *Argument Binding* and define it as in (46).[76]

(46) *Argument Binding (a-binding)*
α *a-binds* β iff
i. α is a DP
ii. α c-commands β
iii. α is coindexed with β
iv. there is no DP γ other than α intervening between α and β such that ii. and iii. hold.

According to (46), *Zelda* in (45a) a-binds *her*, since all the conditions in (i)-(iv) are met. The same is true for *Zelda* and *her* in (45b); since β_2 is a binding operator and not a DP, it does not count as an intervener for a-binding between *Zelda* and *her*. The principle in (47), then, rules out both (45a) and (45b).

(47) *Principle B (first version)*
Pronominal anaphors are not a-bound in their local domain.

We will need to further amend the system to make (47) work. Notice that (47) rules (45b) out 'by accident'. Nothing in the system forces coindexing between *Zelda* and *her* in (45b); (48) is a syntactic representation generated by the system that escapes (47), but still leads to the undesired interpretation.

(48) [$_S$ Zelda$_1$ [$_{VP*}$ β_2 [$_{VP}$ praised her$_2$]]]

A second issue is that pronouns with quantificational antecedents still disallow reflexive interpretations; (49a) does not have a meaning in which every actress praised herself. But, since we have assumed that quantificational DPs bear no

[76] The dependency in (46) is what Heim and Kratzer (1998) and Büring (2005) call syn(tactic)-binding.

indices, (49b) is not blocked by (47).

(49) a. Every actress praised her.
b. [$_S$ every actress [$_{VP*}$ β_2 [$_{VP}$ praised her$_2$]]]

A possible way to deal with the problems with (48) and (49) and keep the definition of Principle B as in (47) is to assume, with Heim and Kratzer (1998), that o-binding requires a-binding, as in (50). (50) rules (48) out as a syntactic representation of *Zelda praised her*.

(50) o-binding requires a-binding.

(50) also forces quantificational DPs to bear indices. (49b) should be replaced with (51). (51) does violate (47).

(51) [$_S$ every actress$_2$ [$_{VP*}$ β_2 [$_{VP}$ praised her$_2$]]]

Remember, however, that we do not want quantificational DPs to bear indices, since they are not referential. We should make sure, then, that the index on quantificational DPs is eliminated at some level during the syntactic derivation. Accordingly, Principle B should be stated to apply before that level.[77]

All these amendments have been proposed in the literature and additional evidence has been offered in their support. For our limited purposes of defining the relevant binding theoretic principle, accepting them seems a big price to pay in order to keep with the version of Principle B in (47). An obvious alternative is to simply revise (47) as in (52).

(52) *Principle B (second version)*
Pronominal anaphors are not a- or o-bound in their local domain.

The Principle B in (52) rules out all the syntactic representations above, regardless of what we decide about indexing in representations with o-binding.

If it is too costly to reduce Principle B to a-binding only, it might be possible to reduce it to o-binding. This is the line taken in the work of Tanya Reinhart (1983), who argues that the only syntactically relevant notion (i.e. the only binding theoretically relevant notion) is that of o-binding ('binding' in Reinhart's terminology).

[77] In theories that link the introduction of binding operators with the antecedent DP, elimination of the index on quantificational DPs is usually part of the rule that introduces the binding operator.

Principle B, then, should only care to rule out syntactic representations with o-binding. The principle should be revised as in (53).

(53) *Principle B (final version)*
Pronominal anaphors are not o-bound in their local domain.

The Principle B in (53) obviously rules out (45b). What about (45a)? (45a) is ruled out by an Economy principle that prefers o-binding over coreference. (54) presents a very simplified version of Reinhart's Rule I.[78]

(54) *Rule I*
A pronoun α cannot corefer with a DP β, if the same interpretation can be achieved using o-binding.

Since (45a) and (45b) yield the same interpretation, (54) blocks (45a) in favor of (45b). (45b) is, then, ruled out by (54). For the purposes of this chapter I will assume for Theory 2 a system in the lines of Reinhart, i.e. a Binding Theory that only regulates o-binding.

Coming to reflexives, recall that the syntactic principle that is needed should exclude any discourse referential readings of reflexive anaphors, and simultaneously force reflexive interpretations. This is achieved with the principle in (55).

(55) *Principle A*
Reflexive anaphors are o-bound in their local domain.

The requirement of o-binding rules out discourse anaphoric readings. The requirement for local o-binding together with our previous assumption that binding operators can only attach on VPs forces reflexive interpretations. The only possible syntactic representation for (56), then, is the one in (57a). (57b) -or any other referential construal- is excluded.

(56) Zelda praised herself.
(57) a. $[_S$ Zelda$_2$ $[_{VP^*}$ β_2 $[_{VP}$ praised herself$_2]]]$
b. $[_S$ Zelda$_2$ $[_{VP}$ praised herself$_2]]$

[78] For detailed discussion on the formulation and nature of Rule I, see Grodzinsky and Reinhart (1993), Reinhart (2006), Reuland (2001, to appear), Heim (1993), Fox (1998), Büring (2005), Roelofsen (2008, 2010).

3.2.3 Theory 3: Reflexive anaphors are reflexivizing functions

The third theory for the interpretation and distribution of reflexive anaphors makes no use of variables. Instead, reflexives are functions that take a relation as an argument and return a reflexive property. Since the binding requirement associated with reflexives is built in the lexical semantics of the anaphor, I will call Theory 3 the "semantic theory".

This treatment of reflexives has been proposed by Bach and Partee (1980), Keenan (1987), Szabolcsi (1993), Schlenker (2005), Lechner (2006) among many others. According to the lexical semantics in (59), reflexives are functions that take a relation as an argument and return a property. What *herself* essentially does is to fill the first argument of the relation and demand that the second argument binds that first argument. Hence, the resulting property is necessarily reflexive.

(58) $[\![\text{himself}]\!] = \lambda R \lambda x.\ R(x)(x)$

The composition of a simple transitive sentence like (59) is given in (60). As with the theories before, (59) ends up denoting the desired proposition that Zelda praised Zelda.

(59) Zelda praised herself.

(60) a. $[\![\text{himself}]\!] ([\![\text{praised}]\!]) = (\lambda R \lambda x.\ R(x)(x))\ [(\lambda z \lambda u.\ \text{praised}(z)(u))]$
$= \lambda x.[(\lambda z \lambda u.\ \text{praised}(z)(u))]\ (x)(x)$
$= \lambda x.[(\lambda u.\ \text{praised}(x)(u))]\ (x)$
$= \lambda x.\ \text{praised}(x)(x)$

b. $[\lambda x.\ \text{praised}(x)(x)](\text{Zelda}) = \text{praised}(\text{Zelda})(\text{Zelda})$

Nothing special needs to be said about examples with quantificational antecedents like (61). Since *praised herself* denotes a property, it combines with the generalized quantifier without further assumption.

(61) Every actress praised herself.

(62) $[\![[_S \text{ every actress } [_{VP} \text{ praised herself}]]\!] = 1$ iff
$\forall y: \text{actress}(y) = 1 \rightarrow \text{praised}(y)(y) = 1.$

The semantics in (58) derive all the basic characteristics of reflexive anaphors.[79]

[79] For a discussion of reflexive anapghors in positions other than the object of transitive verbs,

Since they force binding, discourse referential readings as in (63) will not be allowed. Binding by non-local antecedents as in (64) is also excluded since the reflexive can only manipulate the argument structure of the relation it combines with. The c-command requirement violation in (65), can be attributed to a type-mismatch; the first argument of a reflexive can only be a relation, not a property, as in (65).

(63) * Oscar praised herself.
(64) * Zelda said that Oscar praised herself.
(65) * Herself praised Zelda.

3.3 Focus theory

The theory presented in Chapter 2 has four main characteristics: (i) it adopts a *recursive* model of prosodic assignment (cf. Wagner (2005)), (ii) it utilizes a single information structural notion, that of *Givenness* (cf. Schwarzschild (1999)), defined in (1), (iii) it requires that domains of evaluation for Givenness are *cyclic*, as in (2), and (iv) it uses an Economy Principle based on Maximize Presupposition, *Maximize Focus Presupposition*, in (3). In this section I shortly present the theory focusing on some key examples that will be relevant for the rest of this chapter.

(1) *Givenness*
An utterance U counts as *Given* iff it has a salient antecedent A and
a. if U is of type e, then A and U corefer.
b. otherwise: A entails the Existential F-closure of U, modulo ∃-type shifting.

(2) *Cyclic Domains*
Cyclic nodes must be Given.

(3) *Maximize Focus Presupposition*
If *φ* and *ψ* are syntactic representations that are both Given in a discourse *c*, and the Existential F-closure of *φ* asymmetrically entails the Existential F-closure of *ψ*, then one must use *φ* in *c*, not *ψ*.

Although Focus Theory is primarily concerned with determining how *focus* (i.e. in the implementation adopted here, *focus features*) relate to accent, it should also predict when accent is determined by factors other than focus. In the theory of Chapter 2, the distinction comes out as the distinction between application of Focus

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see the Appendix.

Projection and Focus Prominence, on the one hand, and Complement Prominence, on the other. The definitions of the principles are given in (4)-(6). It was also argued that they have to be ranked between them as in (7).

(4) *Complement Prominence*
If A and B are elements in a cycle, and A is a functor and B its complement, B is more prominent that A.

(5) *Focus Prominence*
If A and B are both elements in a cycle, and A is F-marked and B is not, A is more prominent than B.

(6) *Focus Projection*
If A is F-marked and n is the top line in the relevant metrical grid, A projects to n.

(7) Focus Projection >> Focus Prominence >> Complement Prominence

Let us consider first cases where Focus Prominence determines accent, like the example in (8).

(8) A: John praised Mary.
B1: No, BILL praised HELEN.
B2: No, BILL praised Helen. #

The first cyclic node that Cyclic Domains requires to be Given, is the VP *praised Helen*. As shown in (9a) the VP is not Given, since *John praised Mary* does not entail *∃y. praised(Helen)(y)*. F-marking is required. (9b) and (9c) both satisfy Cyclic Domains since their Existential F-Closures are both entailed by *John praised Mary*. Maximize Focus Presupposition comes into play and favors (9b) over (9c), since *∃x∃y. praised(x)(y)* entails *∃P∃y. P(y)*. Since *Helen* is F-marked, Focus Prominence applies and forces *praised* to Prosodically Subordinate to *Helen*.

(9)	Syntactic structure	Existential F-Closure	Given	MFP
a.	[$_{VP}$ praised Helen]	∃y. praised(Helen)(y)	*	
b.	[$_{VP}$ praised [DP Helen]F]	∃x∃y. praised(x)(y)	✓	←
c.	[$_{VP}$ praised Helen]F	∃P∃y. P(y)	✓	

The next level that is required to be Given is the sentence. Maximize Focus Presupposition forces the F-marking in (10a). Its Existential F-Closure in (10b) is Given, since *John praised Mary* entails *∃x∃y. praised(x)(y)*. Focus Projection will apply and make sure that both *Bill* and *Helen* will project to the top grid line and

receive pitch accents (see the discussion in section 2.4.3.2.1).[80] So, the accent pattern in (8B1) where both *Bill* and *Helen* receive pitch accents is forced, and the one in (8B2) that would correspond to a syntactic structure in which *Helen* is not F-marked, is blocked.

(10) a. $[_S\ [_{DP}$ Bill$]_F\ [_{VP}$ praised $[_{DP}$ Helen$]_F]]$
b. $\exists x \exists y$. praised(x)(y)

The latter is, of course, possible in examples where the VP is Given without the need of any F-marking. Consider (11), for which the judgment is reversed compared to (8). As shown in (12), the structure without F-marking is favored over ones with F-marking, by Maximize Focus Presupposition; *∃y. praised(Helen)(y)* entails both *∃x∃y. praised(x)(y)* and *∃P∃y. P(y)*.

(11) A: John praised Helen.
B1: No, BILL praised HELEN. #
B2: No, BILL praised Helen.

(12)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_{VP}$ praised Helen]	∃y. praised(Helen)(y)	✓	←
b.	$[_{VP}$ praised $[_{DP}$ Helen$]_F]$	∃x∃y. praised(x)(y)	✓	
c.	$[_{VP}$ praised Helen]F	∃P∃y. P(y)	✓	

At the sentence level, F-marking *Bill* will be forced for satisfaction of Cyclic Domains. The syntactic structure is the one in (13a) with the Existential F-Closure in (13b). Since *Bill* is the only F-marked element, it will be the only one receiving a pitch accent, as in (11B2). Syntactic structures that contain more F-marking and would correspond to (11B1) are ruled out.

(13) a. $[_S\ [_{DP}$ Bill$]_F\ [_{VP}$ praised Helen]]
b. ∃y. praised(Helen)(y)

Let us turn now to cases where accent is determined by Complement Prominence. A robust generalization in the theory of focus has been that constituents whose elements are all Given, and constituents whose elements are all not Given, have the same prosodic properties. The theory in Chapter 2 captures the generalization by claiming that this similarity in prosodic structure follows from a

[80] (9c) would also lead to the accent pattern in (8B1). I refer again to section 2.4.3.2.1.

similarity in syntactic structure; constituents of both kinds contain no F-marked elements. If so, Complement Prominence is the only relevant principle that determines prosodic structure in both cases. The claim above was made possible by adopting Cyclic Domains.

Consider example (14). According to Cyclic Domains, the VP *praised Helen* will have to be Given. As shown in (15), (15c) is the only syntactic structure that is Given; the Existential Closure of the question, *∃P. P(Bill)*, entails *∃P∃y. P(y)*, but not *∃P∃x∃y. P(x)(y)* or *∃x∃y. praised(x)(y)*. Since neither *praised* nor *Helen* are F-marked, the prosody of the VP will be determined by Complement Prominence. Complement Prominence will be satisfied by applying either Prosodic Subordination of *praised* to *Helen*, or Prosodic Matching.

(14) A: What did Bill do?
B1: He praised HELEN.
B2: He PRAISED HELEN.

(15)	Syntactic structure	Existential F-Closure	Given
a.	$[_{VP}$ praised Helen]	∃y. praised(Helen)(y)	*
b.	$[_{VP}$ $[_{V}$ praised$]_{F}$ $[_{DP}$ Helen$]_{F}]$	∃P∃x∃y. P(x)(y)	*
c.	$[_{VP}$ praised Helen$]_{F}$	∃P∃y. P(y)	✓

At the sentence level, no further F-marking is required. The Existential F-Closure of (16a) in (16b) is entailed by the Existential Closure of the question, *∃P. P(Bill)*. Since *Bill* is not F-marked, but *[$_{VP}$ praised Helen]* is, the former will Subordinate to the latter. Application of Prosodic Subordination at the VP level, leads to the pattern in (14B1), and application of Prosodic Matching at the VP level, leads to (14B2).

(16) a. $[_{S}$ $[_{DP}$ Bill] $[_{VP}$ praised Helen$]_{F}]$
b. ∃P. P(Bill)

The example in (17) was one where the VP only contained material that is Given. The possible accent patterns are no different than the ones in (14). All the possible syntactic structures in (18) are Given, satisfying Cyclic Domains. Maximize Focus presupposition, however, kicks in to block (18b) and (18c), since they are entailed by (18a); *∃y. praised(Helen)(y)* entails both *∃P∃x∃y. P(x)(y)* and *∃P∃y. P(y)*. Again, there is no F-marking on either *praised* or *Helen*, so prosody will be determined on the basis of Complement Prominence.

(17) A: I asked everyone to praise Helen. What did Bill do?
B1: He praised HELEN.
B2: He PRAISED HELEN.

(18)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_{VP}$ praised Helen]	∃y. praised(Helen)(y)	✓	←
b.	$[_{VP}\ [_{V}$ praised$]_{F}\ [_{DP}$ Helen$]_{F}]$	∃P∃x∃y. P(x)(y)	✓	
c.	$[_{VP}$ praised Helen$]_{F}$	∃P∃y. P(y)	✓	

At the sentence level, further F-marking will be required; the structure with no F-marking in (19a) is not Given. (18b) is Given, since the Existential Closure of the question entails *∃P. P(Bill)*. Since *Bill* is not F-marked, but *[$_{VP}$ praised Helen]* is, the former will Subordinate to the latter. Application of Prosodic Subordination at the VP level, leads to the pattern in (17B1), and application of Prosodic Matching at the VP level, leads to (17B2).

(19)	Syntactic structure	Existential F-Closure	Given
a.	$[_{S}$ Bill $[_{VP}$ praised Helen]]	praised(Helen)(Bill)	*
b.	$[_{S}$ Bill $[_{VP}$ praised Helen$]_{F}$]	∃P. P(Bill)	✓

This section presented the basic properties of the system argued for in Chapter 2. The discussion was organized around the distinction between examples in which accent is determined by F-marking (i.e Focus Projection and Focus Prominence) and examples in which accent is determined by structural factors (i.e. Complement Prominence). This distinction is not theoretically relevant, as the reader of Chapter 2 already knows. Examples (or constituents) of both kinds are handled in a unified system; it is the same theory that applies to both. The distinction will be helpful, however, in organizing the discussion of the prosodic properties of reflexive anaphors in the following sections.

3.4 Stressing a reflexive anaphor

The prosody of reflexives is not rigid. In an out-of-the-blue context as in (1), reflexives appear to subordinate to the predicate. *Zelda* and *praised* both receive pitch accents, with *praised* being the most prominent one, since it is the last element.

(1) ZELDA PRAISED herself.

Reflexives can (and have to) receive pitch accents in environments like the one in example (2). But not when *Oscar* in (2A) is replaced with a reflexive anaphor, as in (3).

(2) A: Lucie praised Oscar.
B1: No, ZELDA praised herself. #
B2: No, ZELDA praised herSELF.

(3) A: Lucie praised herself.
B1: No, ZELDA praised herself.
B2: No, ZELDA praised herSELF. #

It is a consequence of our focus theory that *herself* can only get a pitch accent in environments like (2) and (3) if it is F-marked. The question, then, is why satisfaction of Cyclic Domains requires F-marking of *herself* in (2), but not in (3). This section focuses on this question examining examples like (2) and (3) against the three theories for the semantics of reflexives presented in the previous section. In sections 3.4.1 to 3.4.3 I show that all three theories can capture the basic facts in (2) and (3). The predictions of the theories diverge in some cases in which *Zelda*, the subject in the target sentences becomes a participant in the antecedent sentence. In those cases, it is only the semantic theory that can capture the full pattern. The difference between the theories does not manifest itself in their success of predicting when the reflexive is accented, but in their success of predicting when the subject, the reflexive anaphor's antecedent, is accented.

3.4.1 Theory 1: the pragmatic theory

3.4.1.1 Existential F-Closures

Before going into the data, I first discuss briefly the syntactic representations and corresponding Existential F-Closures our target utterances in (2) and (3) give rise to. I will illustrate using the VPs.

As discussed in the previous section and reaffirmed above, a pitch accent on *herself* in (2) and (3) is only licensed in our theory of prosodic assignment if *herself* is F-marked. Given that the pragmatic theory allows both a referential and a bound construal for VPs containing reflexives, the VPs in B1 and B2, can correspond to the four syntactic representations in (4).

(4)	Phonological form		Syntactic structure
a.	praised herself.	←	[$_{VP}$ praised herself$_1$]
b.	praised herself.	←	[$_{VP^*}$ β1 [$_{VP}$ praised herself$_1$]]
c.	praised herSELF.	←	[$_{VP^*}$ praised [$_{DP}$ herself$_1$]$_F$]
d.	praised herSELF.	←	[$_{VP^*}$ β1 [$_{VP}$ praised [herself$_1$]$_F$]]

Since the syntactic representations in (4a) and (4b) contain no F-marking, their Existential F-Closures correspond to the existentially type-shifted VP meanings. *[$_{VP}$ praised herself$_1$]* denotes *λx.praised(g(1))(x)*, and, assuming –as one must- that g(1)=Zelda, the result of existential type-shifting is *∃x.praised(Zelda)(x)*. *[$_{VP^*}$ β$_1$ [$_{VP}$ praised herself$_1$]]*, on the other hand, denotes *λx.praised (x)(x)*, and the result of existential type-shifting is *∃x.praised(x)(x)*. In the case of (4c) and (4d) in which *herself* is F-marked, it will be treated like any other constituent of type *e*; after existentially type-shifting the VP meaning, *herself* will be substituted by a variable of type *e* and that variable will be Existentially Closed. For (4c) , the steps are shown in (5). For (4d), the steps are shown in (6). Crucially, the result of building the Existential F-Closure of the bound construal in (4d) is that the binding dependency between *herself* and the binding operator is broken.[81]

(5)	a.	λx.praised(g(1))(x)	
	b.	∃x.praised(g(1)) (x)	after existential type-shifting
	c.	∃x.praised(y)(x)	after replacement of F-marked material with variable
	d.	∃y∃x.praised(y)(x)	after Existential Closure
(6)	a.	λx.praised(x)(x)	
	b.	∃x.praised(x) (x)	after existential type-shifting
	c.	∃x.praised(y)(x)	after replacement of F-marked material with variable
	d.	∃y∃x.praised(y)(x)	after Existential Closure

The table in (7) gives an overview of the candidate structures and their corresponding Existential F-Closures.

[81] See Kratzer (1991) for a detailed exposition of this in a formal system that interprets F-variables relative to a special assignment function *h*. The same result holds in Rooth's Alternative Semantics, see, e.g., Rooth (1985, 1992).

(7)	Phonologicalform		Syntactic structure		ExistentialF-Closure
a.	praised herself.	←	[$_{VP}$ praised herself$_1$]	→	∃y.praised(Zelda)(y)
b.	praised herself.	←	[$_{VP^*}$β$_1$[$_{VP}$praised herself$_1$]]	→	∃x.praised(x)(x)
c.	praisedherSELF.	←	[$_{VP}$ praised [$_{DP}$ herself$_1$]$_F$]	→	∃y∃x.praised(y)(x)
d.	praisedherSELF.	←	[$_{VP^*}$β$_1$[$_{VP}$praised[herself$_1$]$_F$]]	→	∃y∃x.praised(y)(x)

3.4.1.2 The data

The theory makes the correct prediction for the examples in (2) and (3). Consider, first, example (3) repeated here in (8); *herself* in (8) cannot bear a pitch accent.

(8) A: Lucie praised herself.
B1: No, ZELDA praised herself.
B2: No, ZELDA praised herSELF. #

Cyclic Domains demands that the VP *praised herself* is Given. The Existential F-Closure of (9a) is *∃y.praised(Zelda)(y)*. *Lucie praised herself* does not entail *∃y.praised(Zelda)(y)*, so (9a) does not meet Cyclic Domains. If the reflexive is bound, as in (9b), the Existential F-Closure is *∃y.praised(y)(y)*. Since, *Lucie praised herself* entails *∃y.praised(y)(y)*, (9b) is Given. In the third option in (9c), the reflexive is F-marked. The Existential F-Closure is *∃x∃y.praised(x)(y)*, which is entailed by *Lucie praised herself*. The same holds for (9d). (9c) and (9d), however, are blocked because of Maximize Focus Presupposition; *∃y.praised(y)(y)* asymmetrically entails *∃x∃y.praised(x)(y)* and (9b) wins over (9c) and (9d).[82]

(9)	Syntactic structure	Existential F-Closure	Given	MFP
a.	[$_{VP}$ praised herself$_1$]	∃y. praised(Zelda)(y)	*	
b.	[$_{VP^*}$ β1 [$_{VP}$ praised herself$_1$]]	∃y. praised(y)(y)	✓	←
c.	[$_{VP}$ praised [$_{DP}$ herself$_1$]$_F$]	∃x∃y. praised(x)(y)	✓	
d.	[$_{VP^*}$ β1 [$_{VP}$ praised [herself$_1$]$_F$]]	∃x∃y. praised(x)(y)	✓	

F-marking *herself* is, thus, already ruled out at the VP level. At the sentence level,

[82] As Rick Nouwen (p.c.) points out, the theory only makes the right prediction if if bound and referential construals are members of the same set of competitors. If otherwise, the theory predicts optionality between (8B1) and (8B2). (9c) would still be blocked by MFP when compared with (9b), but it wins if compared with (9a) alone; in this case, (9c) is the only candidate that satisfies Cyclic Domains.

further F-marking is needed. As shown in (10), leaving the subject without F-marking does not satisfy Cyclic Domains, since *Lucie praised herself* does not entail *Zelda praised Zelda*. F-marking *Zelda* does satisfy Cyclic Domains, since *Lucie praised herself* entails *∃y.praised(y)(y)*. Since *Zelda* is F-marked and the VP is not, the VP will Prosodically Subordinate to *Zelda*. *Zelda* will, thus, be the only element projecting to the top grid line, and the only element to bear a pitch accent.

(10)	Syntactic structure	Existential F-Closure	Given
a.	$[_S$ Zelda $[_{VP^*}$ β1 $[_{VP}$ praised herself$_1]]]$	praised(Zelda)(Zelda)	*
b.	$[_S [_{VP}$ Zelda]F $[_{VP^*}$ β1 $[_{VP}$ praised herself$_1]]]$	∃y. praised(y)(y)	✓

Things are different for example (2), repeated here in (11). The reflexive anaphor in (11) obligatorily bears a pitch accent.

(11) A: Lucie praised Oscar.
B1: No, ZELDA praised herSELF.
B2: No, ZELDA praised herself. #

The difference is predicted by Theory 1, since the bound variant is no longer Given, at the VP level. As shown in (12), (12a) and (12b) both fail to satisfy Cyclic Domains, since *Lucie praised Oscar* entails neither *∃y.praised(Zelda)(y)* nor *∃y.praised(y)(y)*. (12c) or (12d), in which the reflexive is F-marked, is the only way to satisfy Cyclic Domains; *Lucie praised Oscar* entails *∃x∃y.praised(x)(y)*.

(12)	Syntactic structure	Existential F-Closure	Given
a.	$[_{VP}$ praised herself$_1]$	∃y. praised(Zelda)(y)	*
b.	$[_{VP^*}$ β1 $[_{VP}$ praised herself$_1]]$	∃y. praised(y)(y)	*
c.	$[_{VP}$ praised $[_{DP}$ herself$_1]_F]$	∃x∃y. praised(x)(y)	✓
d.	$[_{VP^*}$ β1 $[_{VP}$ praised $[$herself$_1]_F]]$	∃x∃y. praised(x)(y)	✓

At the sentence level, F-marking *Zelda* is again obligatory, as shown in (13). On the prosody side, Focus Projection will force both *Zelda* and *herself* to project to the top grid line and both will bear pitch accents, as in (11B1). Since, the variant with no F-marking on *herself* is ruled out at the VP level, there is no way to generate the accent pattern in (11B2).

(13)	Syntactic structure	Existential F-Closure	Given
a.	$[_S$ Zelda $[_{VP}$ praised $[\text{herself}_1]_F]]]$	∃x. praised(x)(Zelda)	*
b.	$[_S$ Zelda $[_{VP^*}$ β1 $[_{VP}$ praised $[\text{herself}_1]_F]]]$	∃x. praised(x)(Zelda)	*
c.	$[_S [_{DP}$ Zelda$]_F [_{VP}$ praised $[\text{herself}_1]_F]]]$	∃x∃y. praised(x)(y)	✓
d.	$[_S [_{DP}$ Zelda$]_F [_{VP^*}$ β1 $[_{VP}$ praised $[\text{herself}_1]_F]]]$	∃x∃y. praised(x)(y)	✓

The pragmatic theory, then, correctly predicts the distribution of stress in examples (2) and (3).

3.3.1.3 Question-Answer Congruence

Roelofsen presents the example in (14), from Dalrymple (1991) (without indicating its stress pattern) as evidence for Theory 1. According to Roelofsen (2008): "This example clearly shows that [reflexive anaphors] cannot only be interpreted as bound variables, but also referentially." "Th[e] assumption [that reflexive anaphors cannot be interpreted referentially] wrongly predicts that the question-answer pair in [(14)] is incongruent[.]". This section refutes this argument.

(14) A: Who praised Zelda?
B: Zelda praised herself.

Clearly, the success or failure of Roelofsen's argument depends on what it means for a Question-Answer pair to be *congruent*. For the argument to go through there should be a definition of Question-Answer Congruence, such that it is satisfied in (14) under the referential construal of the reflexive, but not under the bound construal. Roelofsen does not provide a definition of QA-Congruence. I will consider two possible definitions, one that does not make reference to focus, and one that does.[83]

The first version on QA-Congruence in (15), makes no reference to focus. It simply states that the proposition denoted by the answer should be a member of the set of propositions denoted by the question.

[83] The definitions are borrowed from Krifka (2004). The second version has been adapted to make reference to Existential-F-Closures rather than Focus Values. Krifka's original formulation in Alternative Semantics is given in (i) (where $[\![A]\!]^F$ is the focus value of A).

(i) *Q-A Congruence*
If the meaning of a question Q is the set of its possible answers (Hamblin 1973) $[\![Q]\!]^H$, an answer A is a congruent answer to question Q iff $[\![A]\!] \in [\![Q]\!]^H$ and $[\![Q]\!]^H$ [subset] $[\![A]\!]^F$.

(15) *Question-Answer Congruence (first version)*
If the meaning of a question Q is the set of its possible answers (Hamblin 1973), an answer A is a *congruent answer* to question Q iff A is a member of Q.

The formulation in (15) cannot be used to make Roelofsen's argument. The problem is that both the bound and the referential construal denote the same proposition, *Zelda praised Zelda*. They both satisfy (15) since *Zelda praised Zelda* is a member of the set { x praised Zelda}, and the first version of QA-Conguence cannot distinguish between the bound and the referential construal. The argument needs a definition of QA-Congruence that makes more fine-grained distinctions than propositions.

The second version of QA-Congruence in (16) makes reference to focus. It requires that the Existential Closure of the question entails the Existential F-Closure of the answer.[84]

(16) *Question-Answer Congruence (second version)*
If the meaning of a question Q is the set of its possible answers (Hamblin 1973), an answer A is a *congruent answer* to question Q iff A is member of Q, and the Existential Closure of Q entails the Existential F-Closure of A.

In order to evaluate (16) for (14), one needs to know the accent pattern of the answer. This is given in (17). A felicitous answer to the question in (17A) requires that the reflexive bears a pitch accent and the subject does not. If the meaning of a question Q is the set of its possible answers

(17) A: Who praised Zelda?
B: Zelda praised herSELF.

For Roelofsen's argument to hold the Existential Closure of (17A), $\exists y.praised(Zelda)(y)$, should entail the Existential F-Closure of (17B) under the referential construal but not under the bound construal. As shown in the previous

[84] The second requirement that the Existential Closure of the question entails the Existential F-Closure of the answer is, of course, the same requirement posed by Cyclic Domains (or Given Domains in Schwarzschild (1999)) that the sentence must be Given. As shown in section 2.2.2, Schwarzschild's theory renders a special QA-Congruence principle superfluous. This is so for versions of QA-Congruence that make reference to focus. The first version of QA-Congruence in (15) is still needed.

section, however, the Existential F-Closure of (17B) is the same, regardless of whether the reflexive is bound or not. In both cases the Existential F-Closure is *∃y.praised(y)(Zelda)*. *∃y.praised(y)(Zelda)* is not entailed by *∃y.praised(Zelda)(y)*, so the pair in (17) is wrongly predicted to be *incongruent*.

In conclusion, there is no obvious formulation of Question-Answer Congruence that can distinguish between the bound and referential construals in (14)/ (17). Moreover, Theory 1 seems to make the wrong prediction for such examples, the moment Givenness licensing considerations are factored in.

3.4.2 Theory 2: the syntactic theory

Theory 2 allows a subset of the construals allowed by the pragmatic theory, since it excludes all the referential construals. Notice, however, the referential construals played no part in correctly predicting the stress patterns of our basic examples in (2) and (3) for the pragmatic theory. It follows, then, that the syntactic theory will make the correct predictions as well.

Consider first, example (2), repeated in (18), where no pitch accent is tolerated on the reflexive.

(18) A: Lucie praised herself.
B1: No, ZELDA praised herSELF. #
B2: No, ZELDA praised herself.

As shown in (19) for the VP level, the Existential Closures of both the F-marked version in (19b) and the non-F-marked version in (19a) are Given, and respect Cyclic Domains. Maximize Focus Presupposition blocks (19b), however, since *∃y.praised(y)(y)*, the Existential F-Closure of (19a), asymmetrically entails *∃x∃y.praised(x)(y)*, the Existential F-Closure of (19b).

(19)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_{VP^*}$ β1 $[_{VP}$ praised herself$_1]]$	∃y. praised(y)(y)	✓	←
b.	$[_{VP^*}$ β1 $[_{VP}$ praised $[$herself$_1]_F]]$	∃x∃y. praised(x)(y)	✓	

At the sentence level, *Zelda* will have to be F-marked in order for the sentence to be Given. The syntactic structure of the sentence is the one in (20a), with the Existential F-Closure in (20b). since *Zelda* is F-marked and the VP is not, Prosodic Subordination will apply, projecting only *Zelda* to the top grid line. So, *Zelda* will be

the only element bearing a pitch accent.

(20)	Syntactic structure	Existential F-Closure	Given
a.	$[_S$ Zelda $[_{VP^*}$ β1 $[_{VP}$ praised herself$_1]]]]$	praised(Zelda)(Zelda)	*
b.	$[_S [_{DP}$ Zelda$]_F [_{VP^*}$ β1 $[_{VP}$ praised herself$_1]]]]$	∃y. praised(y)(y)	✓

Examples in which the reflexive obligatorily bears a pitch accent are also successfully handled. Consider, first, example (3), repeated here in (21).

(21) A: Lucie praised Oscar.
B1: No, ZELDA praised herSELF.
B2: No, ZELDA praised herself. #

As shown in (22), the F-marked version in (22b) is the only one that is Given; *Lucie praised Oscar* entails *∃x∃y.praised(x)(y)*, but not *∃y.praised(y)(y)*. F-marking the reflexive is, thus, obligatory at the VP level.

(22)	Syntactic structure	Existential F-Closure	Given
a.	$[_{VP^*}$ β1 $[_{VP}$ praised herself$_1]]$	∃y. praised(y)(y)	*
b.	$[_{VP^*}$ β1 $[_{VP}$ praised $[$herself$_1]_F]]$	∃x∃y. praised(x)(y)	✓

At the sentence level, *Zelda* will have to be F-marked, giving rise to the structure in (23a) with the Existential F-Closure in (23b). Since both *Zelda* and *herself* are F-marked, Focus Projection forces both to project to the top grid line, so both bear pitch accents, as in (21B1).

(23)	Syntactic structure	Existential F-Closure	Given
a.	$[_S$ Zelda $[_{VP^*}$ β1 $[_{VP}$ praised $[$herself$_1]_F]]]$	∃x raised(x)(Zelda)	*
b.	$[_S [_{DP}$ Zelda$]_F [_{VP^*}$ β1 $[_{VP}$ praised $[$herself$_1]_F]]]$	∃x∃y. praised(x)(y)	✓

The syntactic theory, then, makes the correct predictions. I will now move to the semantic theory.

3.4.3 Theory 3: the semantic theory

3.4.3.1 Existential F-Closures

Before discussing how the semantic theory deals with the data, let us briefly present the syntactic representations and corresponding Existential F-Closures it gives rise to. I illustrate again using the VP level.

In case the reflexive is not F-marked, the semantic theory does not differ from the syntactic theory above; VPs like *praised herself* denote *λx.praised(x)(x)*, even if they reach this meaning in very different ways. The Existential F-Closure of *[$_{VP}$ praised herself]* will then simply be *∃x.praised(x)(x)*. Things are different when the reflexive is F-marked, since reflexives are no longer of type *e*. Reflexives denote functions that take a relation as an argument and return a property; they are of type *eet,et*. The existential F-Closure of *[$_{VP}$ praised [herself]$_F$]* is built in (24). The meaning of the VP is built by applying the verb-meaning to the reflexivizer. Since *herself* is F-marked it is substituted by a variable of the same type, i.e. a variable of type *eet,et*. Given that functions of this type are reduce the arity of the relation they apply to, the result of applying such functions to a two-place relation like *praised* is to reduce *praised* to a one-place function. I abbreviate this result as in (24c), where *Q-praised* is the result of applying *Q* to *praised*. After existential type-shifting and Existential Closure of the F-variable,the result is the Existential F-Closure in (24e).

(24)	a.	⟦ [$_{VP}$ praised [herself]$_F$] ⟧ = ⟦[herself]$_F$ ⟧ (⟦ praised ⟧)	
	b.	⟦Q$_{eet.et}$ ⟧ (⟦ praised ⟧)	*replace with variable of same type*
	c.	λx.Q-praised(x)	*apply function to relation*
	d.	∃x.Q-praised(x)	*existential type-shifting*
	e.	∃Q∃x.Q-praised(x)	*Existential Closure*

3.4.3.2 The data

Let's start again with example (3), repeated in (25). The Existential F-Closure of the unmarked version in (25a) is the same as before, since the predicate has already been reflexivized, and it it is clearly entailed by the antecedent. The Existential F-Closure of the F-marked version in (26b) is Given since *Lucie praised herseslf* entails *∃Q$_{eet,et}$∃x.Q-praised(x)*. Still, it is blocked by Maximize Focus Presupposition, since *∃x.praised(x)(x)* asymmetrically entails *∃Q$_{eet,et}$∃x.Q-praised(x)*. *∃Q$_{eet,et}$∃x.Q-praised(x)* does not entail *∃x.praised(x)(x)*, since not all functions from relations to properties are reflexivizing functions.

(25) A: Lucie praised herself.
B1: No, ZELDA praised herSELF. #
B2: No, ZELDA praised herself.

(26)	Syntactic structure	Existential F-Closure	Given	MFP
a.	[$_{VP}$ praised herself]	∃x. praised(x)(x)	✓	←
b.	[$_{VP}$ praised [$_{VP}$ herself]$_{F}$]	∃Qeet,et∃x. Q-praised (x)	✓	

At the sentence level, *Zelda* will have to be F-marked for reasons that are by now familiar. Since *Zelda* is the only F-marked element, it will be the only one projecting to the top grid line, and the only element to bear a pitch accent, as in (25B2).

Consider, next, example (2), repeated in (27). The unmarked version in (28a) is clearly not Given and it is ruled out. The question is whether (28b) is Given and satisfies Cyclic Domains. In order to see whether *Lucie praised Oscar* entails $\exists Q_{eet,et} \exists x. Q\text{-}praised\ (x)$ or not, it is required that functions from relations to properties other than the reflexivizing function are considered.

(27) A: Lucie praised Oscar.
B1: No, ZELDA praised herSELF.
B2: No, ZELDA praised herself. #

(28)	Syntactic structure	Existential F-Closure	Given
a.	[$_{VP}$ praised herself]	∃x. praised(x)(x)	*
b.	[$_{VP}$ praised [$_{DP}$ herself]$_{F}$]	$\exists Q_{eet,et} \exists$x. Q-praised(x)	✓

One such function is passivization.[85] Consider a simple semantics for the passive in (29). *PASS* in (29) stands for an abstract morpheme/ lexical item that merges with the verb, and is manifested syntactically with the familiar correlates. What passivization does semantically is to turn a relation into a property by saturating the external argument.

(29) ⟦PASS⟧ = λRλx∃y. R(x)(y)

If passivization has the semantics in (29), the relevant entailment holds; *Lucie praised Oscar* entails $\exists Q_{eet,et} \exists x. Q\text{-}praised(x)$ since *Lucie praised Oscar* entails that someone was praised. (28b), then, is Given, and it is the only candidate VP that

[85] Winfried Lechner (p.c.) first notified me to the importance of passivization in this context.

satisfies Cyclic Domains.

At the sentence level, F-marking *Zelda* is again obligatory. Only (30b) is Given, since *Lucie praised Oscar* entails $\exists Q_{eet,et} \exists x.Q\text{-}praised(x)$, but not that $\exists Q_{eet,et}.Q\text{-}praised(Zelda)$. Since *Zelda* and *herself* are both F-marked, they will both bear pitch accents, as in (27B1).

(30)	Syntactic structure	Existential F-Closure	Given
a.	$[_S$ Zelda praised $[_{DP}$ herself$]_F]$	$\exists Q_{eet,et}$. Q-praised(Zelda)	*
b.	$[_S [_{DP}$ Zelda$]_F$ praised $[_{DP}$ herself$]_F]$	$\exists Q_{eet,e} t \exists$x. Q-praised(x)	✓

The semantic theory, then, makes the correct prediction for the distribution of accent in the basic examples, making explicit the relation between reflexivization and other operations on argument structure, like passivization.

3.4.4 Deaccenting Zelda

In all of the examples presented so far, *Zelda*, the subject of the target sentence and antecedent of the reflexive, was forced to be F-marked and, hence, accented. In this section I discuss examples in which *Zelda* can and must remain unaccented. These are examples in which Zelda becomes one of the participants in the antecedent sentence, either as an agent or a theme of praising. The latter kind of examples help us distinguish between the three competing theories, as it will be shown that only the semantic theory can predict the observed pattern.

3.4.4.1 Zelda is doing some praising

This section shows how the three theories correctly predict examples, like (1), in which Zelda is the agent in the antecedent utterance. As shown in (31), deaccenting *Zelda* in the target sentence is not only possible, but obligatory. Notice that for all three theories, example (31) is identical to example (2) when it comes to the VP level; all theories predict that *herself* has to be F-marked. In what follows, I will allow myself a little shortcut and only discuss the predictions of the theories at the sentence level.

(31) A: Zelda praised Oscar.
B1: No, ZELDA praised herSELF. #
B2: No, Zelda praised herSELF.

Starting with the pragmatic theory, recall from the discussion of example (2) that F-marking on the reflexive is already licensed at the VP level for both the bound and the referential construal. At the sentence level, then, there are four candidates after factoring in the possibility of F-marking the subject. As seen in (32), all candidates are Given and satisfy Cyclic Domains; *Zelda praised Oscar* entails both *∃x.praised(x)(Zelda)* and *∃x∃y.praised(x)(y)*. Maximize Focus Presupposition, however, blocks (32a/b) in favor of (32c/d) since *∃x.praised(x)(Zelda)* asymmetrically entails *∃x∃y.praised(x)(y)*. (32c/d) that contain no F-marking on *Zelda*, are, thus, the winning candidates that both lead to the felicitous prosodic pattern in (31B2).

(32)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_S\ [_{DP}$ Zelda$]_F\ [_{VP}$ praised [herself$_1]_F]]$	∃x∃y. praised(x)(y)	✓	
b.	$[_S[_{DP}$Zelda$]_F[_{VP^*}\beta_1[_{VP}$praised[herself$_1]_F]]]$	∃x∃y. praised(x)(y)	✓	
c.	$[_S$ Zelda $[_{VP}$ praised [herself$_1]_F]]]$	∃x. praised(x)(Zelda)	✓	←
d.	$[_S$ Zelda $[_{VP^*}\ \beta1\ [_{VP}$ praised [herself$_1]_F]]]$	∃x. praised(x)(Zelda)	✓	←

Also the syntactic theory makes the correct prediction for example (31). The syntactic theory generates a subset of the candidates that the pragmatic theory generates. Since the candidates that are excluded (the ones containing referential construals) played no essential role in deriving the correct pattern for the pragmatic theory, it follows that the syntactic theory also makes the correct prediction. This is illustrated in (33).

(33)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_S[_{DP}$Zelda$]_F[_{VP^*}\beta_1[_{VP}$praised[herself$_1]_F]]]$	∃x∃y.praised(x)(y)	✓	
b.	$[_S$ Zelda $[_{VP^*}\ \beta1\ [_{VP}$ praised [herself$_1]_F]]]$	∃x.praised(x)(Zelda)	✓	←

The semantic theory captures example (31) correctly as long the inventory of functions of type *eet,et* is expanded. At the VP level, the example is similar to (2) in the previous section; the VP is not Given without F-marking the reflexive. At the sentence level, the version in which the subject is F-marked, as in (34a) is Given; *Zelda praised Lucie* entails $\exists Q_{eet,et}\exists x.Q\text{-}praised(x)$, for *Q=PASS*; Zelda praised Oscar entails that someone got praised . What about the version in (34b) where there is no F-marking on the subject? (34b) would be Given if *Zelda praised Oscar* entailed $\exists Q_{eet,et}.\ Q\text{-}praised\ (Zelda)$. The entailment does not hold for either of the two functions considered so far, i.e. REFL and PASS; *Zelda praised Lucie* entails neither

that Zelda praised herself or that Zelda got praised. If so, (34b) is not Given, and (34a) is the only available candidate. (34a), however, leads to the infelicitous pattern in (31B1).

(34)	Syntactic structure	Existential F-Closure	Given
a.	$[_S\ [_{DP}$ Zelda$]_F$ praised $[_{DP}$ herself$]_F]$	$\exists Q_{eet,et} \exists x.$ Q-praised(x)	
b.	$[_S$ Zelda praised $[_{DP}$ herself$]_F]$	$\exists Q_{eet,et}.$ Q-praised(Zelda)	✓

According to the definition of Givenness, an utterance will be Given if it is entailed by some salient antecedent. In the mini-discourses used here, saliency of the antecedent is never an issue. In this case, too, it is evident that Speaker A's utterance "Zelda praised Oscar" counts as a salient antecedent. The question, then, is whether an entailment relation holds between (31A) and the Existential F-Closure of (31B2). In fact it is not difficult to define a function Q for which the entailment holds. Consider a function that turns a relation into a property by saturating its internal argument, as in (35). Indeed, *Zelda praised Oscar* entails $\exists Q_{eet,et}.$*Q-praised (Zelda)* for $Q=\lambda R \lambda y \exists x.$ *R(x)(y)*; Zelda praised Oscar entails that Zelda praised someone.

(35) $\lambda R \lambda y \exists x.$ R(x)(y)

Since the entailment holds, (34b) is Given, as shown in (36). Even though both (36a) and (36b) are Given, Maximize Focus Presupposition kicks in to block (6a), since $\exists Q_{eet,et}.$*Q-praised(Zelda)* asymmetrically entails $\exists Q_{eet,et} \exists x.$*Q-praised(x)*. (36b) corresponds to the accent pattern in (31B2) and the theory makes the correct prediction.

(36)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_S\ [_{DP}$ Zelda$]_F$ praised $[_{DP}$ herself$]_F]$	$\exists Q_{eet,et} \exists x.$ Q-praised(x)	✓	
b.	$[_S$ Zelda praised $[_{DP}$ herself$]_F]$	$\exists Q_{eet,et}.$ Q-praised(Zelda)	✓	←

The question might arise whether functions like the one in (35) are actually used in English (or other languages) or not. Winfried Lechner (p.c.) points out that (35) has been proposed to deal with indefinite object deletion in (37a/b), where the object of eating is not only dropped, but can be left unspecified. He adds, however, that there are reasons to doubt the semantics of (37a) are as in (37b), since (37b) predicts the

predicate to be telic, which is not the case.[86]

(37) a. Oscar is eating.
b. ∃x. is-eating(x)(Oscar)

The function in (35) is mostly used in the domain of possessives and relational nouns. Its main work is to allow relational nouns to appear without an overt possessor, as in, e.g., *the mother*. Since nouns like *mother*, which denote two place relations, e.g. *λxλy.mother-of(x)(y)*, cannot combine with the definite determiner that takes a property as its argument, they have to be type-shifted. Applying (35) on the denotation of *mother*, the noun denotes a property, *λy∃x.mother-of(x)(y)*, and composition is possible. I refer to Barker (2008) for an overview and full discussion of the use of (35) in that domain.

All three theories, then, can also account for example (31). The next section distinguishes between them.

3.4.4.2 Zelda is being praised

I turn now to examples in which the object of praising in Speaker A's utterance – *Zelda*, in our examples- is the subject of praising in Speaker B's utterance. As can be seen in (38), in such examples *Zelda* can receive no pitch accent. It is shown in this section that the semantic theory is the only one that derives this pattern.

(38) A: Oscar praised Zelda.
B1: No, ZELDA/Zelda praised herself. #
B2: No, ZELDA praised herSELF.
B3: No, Zelda praised herSELF. ?

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[86] Alexis Dimitriadis (p.c.) reminds me that Greek has very productive object suppression, as in (i).

(i) A: Agorases sapuni? B: Agorasa.
bought-you soap bought-I
'Didi you buy soap?' 'I did.'

Elena Anagnostopoulou (p.c.) points out that the same function seems to be operative in the anti-passive construction of ergative languages. In this construction, the object is demoted and optionally expressed as an oblique PP, whereas the subject (in the normal transitive sentence marked with ERGATIVE) surfaces with the Case normally assigned to the object (ABSOLUTIVE). See Marantz (1984) and much subsequent work.

The pragmatic theory fails with example (38) already at the VP level. From the four candidates in (39), all but (39b), satisfy Cyclic Domains; (39a), that has no F-marking on the reflexive and corresponds to a referential construal, is Given, *since Oscar praised Zelda* entails *∃y.praised(Zelda)(y)*. (39c/d), in which the reflexive is F-marked are also Given since *Oscar praised Zelda* entails *∃x∃y.praised(x)(y)*. Notice, however, that Maximize Focus Presupposition blocks (39c/d) in favour of (39a); *∃y.praised(Zelda)(y)* asymmetrically entails *∃x∃y.praised(x)(y)*. Since the reflexive anaphor in (39a) is not F-marked, it will never project to the top grid line and receive a pitch accent. As shown in (38), however, accenting the reflexive is obligatory.

(39)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_{VP}$ praised herself$_1]$	∃y. praised(Zelda)(y)	✓	←
b.	$[_{VP^*}$ β1 $[_{VP}$ praised herself$_1]]$	∃y. praised(y)(y)	*	
c.	$[_{VP}$ praised $[_{DP}$ herself$_1]_F]$	∃x∃y. praised(x)(y)	✓	
d.	$[_{VP^*}$ β1 $[_{VP}$ praised $[$herself$_1]_F]]$	∃x∃y. praised(x)(y)	✓	

Since the syntactic theory does not generate the referential construal, it has no problem deriving the correct pattern at the VP level. From the two candidates it generates in (40), only (40b), in which the reflexive is F-marked, is Given; *Oscar praised Zelda* entails *∃x∃y.praised(x)(y)*, but not *∃y.praised(y)(y)*.

(40)	Syntactic structure	Existential F-Closure	Given
a.	$[_{VP^*}$ β1 $[_{VP}$ praised herself$_1]]$	∃y. praised(y)(y)	*
b.	$[_{VP^*}$ β1 $[_{VP}$ praised $[$herself$_1]_F]]$	∃x∃y. praised(x)(y)	✓

The syntactic theory still fails at the sentence level. Out of the two candidate syntactic structures in (41), one in which the subject is F-marked and one in which it is not, only the former is Given; *Oscar praised Zelda* entails *∃x∃y.praised(x)(y)*, but not *∃y.praised(y)(Zelda)*. (41a) is, thus, the only candidate that satisfies Cyclic Domains and it is chosen. (41a), however, only corresponds to a prosodic structure where *Zelda* receives a pitch accent, as in (38B2); (38B3) is not licensed.

(41)	Syntactic structure	Existential F-Closure	Given
a.	$[_S$ $[_{DP}$ Zelda$]_F$ $[_{VP^*}$ β1 $[_{VP}$ praised $[$herself$_1]_F]]]$	∃x∃y. praised(x)(y)	✓
b.	$[_S$ Zelda $[_{VP^*}$ β1 $[_{VP}$ praised $[$herself$_1]_F]]]$	∃y. praised(y)(Zelda)	*

The semantic theory has no problem accounting for example (38). At the VP level, the theory predicts the obligatoriness of F-marking the reflexive. Out of the two candidates in (42a) and (42b), only (42b), in which the reflexive is F-marked, is Given; *Oscar praised Zelda* entails $\exists Q_{eet,et} \exists x.\ Q\text{-}praised(x)$ (for *Q=PASS*), but not $\exists x.praised(x)(x)$.

(42)	Syntactic structure	Existential F-Closure	Given
a.	$[_{VP}$ praised herself]	$\exists x.$ praised(x)(x)	*
b.	$[_{VP}$ praised $[_{DP}$ herself$]_F]$	$\exists Q_{eet,et} \exists x.$ Q-praised(x)	✓

The theory also makes the correct prediction at the sentence level. Both candidates in (43a) and (43b) are Given; *Oscar praised Zelda* entails both $\exists Q_{eet,et}.Q\text{-}praised(Zelda)$ and $\exists Q_{eet,et} \exists x.Q\text{-}praised(x)$ (for *Q=PASS*). Since, $\exists Q_{eet,et}.Q\text{-}praised(Zelda)$ asymmetrically entails $\exists Q_{eet,et} \exists x.Q\text{-}praised(x)$, Economy favours (43b). The candidate in which *Zelda* is not F-marked, then, is chosen over the candidate in which it is. Since, (43b) corresponds to (1B3), the theory correctly predicts the felicitous pattern to be available.

(43)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_S$ $[_{DP}$ Zelda$]_F$ praised $[_{DP}$ herself$]_F]$	$\exists Q_{eet,et} \exists x.$Q-praised(x)	✓	
b.	$[_S$ Zelda praised $[_{DP}$ herself$]_F]$	$\exists Q_{eet,et}.$Q-praised(Zelda)	✓	←

The semantic theory still faces a problem, however, as it does not explain the availability of (38B2) in which *Zelda* is accented. Although (43a) (that would correspond to the pattern in (38B2)) is Given, it should be blocked by (43b). The minimally different example in (44), in which the antecedent utterance has been replaced with a question, verifies, however, that the theory makes the correct prediction. The Existential Closure of the question in (44A) is $\exists x.praised(Zelda)(x)$. For purposes of Givenness licensing, then, (44) does not differ from (38); nothing changes in computing the relevant entailments. The pattern in (44) corresponds exactly to the prediction of the semantic theory. The obviation of the Economy violation in (38), then, should be attributed to reasons other than Givenness licensing.

(44) A: Who paised Zelda?
B1: ZELDA/Zelda praised herself. #

B2: ZELDA praised herSELF. #
B3: Zelda praised herSELF. ?

I will discuss the availability of (38B2) in section 3.6, where I discuss the exhaustification implicatures of sentences containing focused reflexives.

3.5 Complement Prominence

This section deals with cases in which the prosody of constituents containing reflexive anaphors is not determined by F-marking, and hence, by Focus Prominence, but by Complement Prominence. These are examples, then, in which no F-marking is involved. Section 3.5.1 specifies the relevant examples and discusses the workings of Complement Prominence. Section 3.5.2 compares the three theories of reflexives against the results of the previous section and argues that the semantic theory is empiricaly superior to its competitors. Section 3.5.3 discusses a possible alternative for the pragmatic and the syntactic theory.

3.5.1 Wagner's Prosodic Asymmetry

According to the focus theory in Chapter 2, the prosody of two sister constituents is determined by Complement Prominence, only in case no F-marking is involved. There are two kinds of environments in which this situation arises. This section presents these environments and shows how the theory derives their possible prosodic patterns.

The first kind of environment is one in which there is no F-marking because all the elements are Given. Consider, for example, the VP *praised Zelda* in (1B). At the VP level, no F-marking is required since the VP is Given. The prosody of *praised Zelda*, then, is determined by Complement Prominence. At the sentence level, the VP will be F-marked. The syntactic structure of (1B) is shown in (2).

(1) A: I asked everyone to praised Zelda. What did Oscar do?
B: He praised Zelda.
(2) $[_S$ He $[_{VP}$ praised Zelda$]_F]$

The same situation arises for the VP in examples like (3). The VP is Given without the need of any F-marking. Its prosody, then, is determined by Complement

Prominence. Given that the subject will have to be F-marked at the sentence level, the syntactic structure of (3B) is the one in (4).

(3) A: Max praised Zelda.
B: No, OSCAR praised Zelda.
(4) $[_S\ [_{DP}$ Oscar$]_F\ [_{VP}$ praised Zelda$]]$

The situation can also arise in examples where all the elements constitute new material, i.e. are not Given. Consider, for example, the VP in (5). For Cyclic Domains to be satisfied, the VP node will be F-marked. Given, however, that neither *praised* nor *Zelda* are F-marked, the prosody of the VP is still determined by Complement Prominence. No further F-marking is needed at the next level, so the syntactic structure is the one in (6).[87]

(5) A: What did Oscar do?
B: He praised Zelda.
(6) $[_S$ He $[_{VP}$ praised Zelda$]_F]$

So the prosody of the VPs in all the examples above is determined by Complement Prominence in (7). The basic intuition that the principle captures is that there is a systematic asymmetry between functions and arguments, in that arguments are always perceived to be more prominent.

(7) *Complement Prominence*
If A and B are elements in a cycle, and A is a functor and B its complement, B is more prominent that A.

In the system presented in the previous chapter there are two ways in which Complement Prominence is satisfied. The first one is one in which the function is Prosodically Subordinated to the argument. The result of Prosodic Subordination is shown in (8a). The second way is to apply Prosodic Matching with the result in (8b).

[87] Crucially, it is not the case that the prosody of all constituents that only contain new material is determined by Complement Prominence. There are cases where F-marking every element is preferred, as in (i). It is Focus Projection, then, that determines the prosody of $[_{VP}$ *praised*$_F$ *Zelda*$_F]$.

(i) A: Oscar dissed Lucie.
B: No, he praised Zelda.

(8) a.
| x |
| x | x |
praised Zelda

b.
| x x |
| x | x |
praised Zelda

Since, in (8a), *Zelda* projects but *praised* does not, *Zelda* will end up being more prominent than *praised*. In examples like (1) and (5), in which *Zelda* will keep projecting to the highest grid line, the difference will be manifested in the assignment of pitch accents; *Zelda* will be accented, but *praised* will not be. In example (3), in which no element of the VP will end up on the top grid line (since the VP will have to subordinate to the F-marked subject at the sentence level), prominence will have different acoustic correlates.

As Wagner (2005) notes, Complement Prominence is also satisfied in (8b), as long as the Nuclear Stress Generalization is factored in. Even though both elements in (8b) project to the same grid line, *Zelda*, the argument, will still be perceived to be more prominent than *praised* simply because it is the last grid mark on in the relevant foot.

(9) *Nuclear Stress Generalization*
Within each foot, nuclear stress is perceived on the last of those grid marks that project highest.

The theory predicts, then, that the VPs in all (1), (3), and (5) can have either of the prosodic structures in (10) (where the notation of capital letters is slightly abused to indicate prominence rather than pitch accent).

(10) a. praised ZELDA
b. PRAISED ZELDA

Wagner's explanation of the stress pattern above that uses both a structural (Complement Prominence) and a linear (Nuclear Stress Generalization) component, makes a prediction. The account predicts that whenever the function-argument order is reversed, Prosodic Subordination of the function to the argument will be forced. To see why this is so, consider the grid marks in (11), that represent an element in which the function-argument order is reversed..

(11) a.
| x |
| x | x |
Arg Func

b.
| x x |
| x | x |
Func Arg

In (11a), Prosodic Subordination has applied and Complement Prominence is

satisfied; the argument will end up being more prominent than the function. Complement Prominence is not satisfied in (11b), however, where Prosodic Matching applies. The reason is that, given the Nuclear Stress Generalization, prominence will be perceived to be on the last element, which, in this case, is the function, rather than the argument. (11b), then, is ruled out as a violation of Complement Prominence.

Wagner (2005) summarizes the prediction in terms of the descriptive Generalization of Prosodic Asymmetry in (12). Even though it is not easy to find syntactic environments in which the verb-object order is reversed in English, Wagner presents substantial evidence from other function-argument dependencies and other languages to back the Generalization in (12). Presenting those goes beyond the scope of this dissertation, so I have to refer to Wagner's work for much detailed discussion.[88]

(11) *Prosodic Asymmetry*
   a. When a functor A precedes its complement B, the functor may be on a par with its argument or may be prosodically subordinated.
      [`A `B] ; [A `B]
   b. When a functor A follows the complement B, A is prosodically subordinated. [`B A]

3.5.2 A new argument for the semantic theory

If one considers the three theories of reflexive anaphors on the basis of the

[88] An obvious empirical domain to check the generalization in (11) are object-verb orders in Germanic languages, like German and Dutch. Kratzer and Selkirk (1997) show that the asymmetry holds in German, as it can be seen in the examples in (i), considered in all-new environments. The asymmetry follows directly from (11) if one assumes that the object in (ii) is in a complement position. Eric Reuland (p.c.) points out that this is not the case in most recent syntactic analyses, in which the object has been moved from a position that follows the verb, as in Kayne (1994). If so, it wil have to be assumed that the prosody is determined after movement has taken place. For an explanation of the asymmetry in (i)/(ii) and the Prosodic Asymmetry generalization that makes no reference to function-argument relations, see Kratzer and Selkirk (2007).

(i) Maria studiert/ STUDIERT die GESETZE.
   Mary is-studying the laws
(ii) Ich glaube dass Maria die GESETZE studiert/ # STUDIERT.
   I think that Mary the laws is-studying

discussion above, it is clear that they make very different predictions for the prosody of VPs containing reflexives when Complement Prominence applies. Theories 1 and 2 treat reflexives as variables, i.e. as individuals, elements of type *e*. The semantic composition proceeds by the verb, a function of type *eet*, taking the individual as an argument. Since, *herself* is an argument and *praised* a function that precedes the argument, a VP like *[$_{VP}$ praised herself]* is predicted to have either of the prosodies in (12a) and (12b); in other words, it is predicted to fall under (11a).

(12) a. praised herSELF
b. PRAISED herSELF

The semantic theory, on the other hand, predicts *[$_{VP}$ praised herself]* to fall under (11b). According to the semantic theory *herself* is a reflexivizing function; i.e. a function from relations to properties of type *eet,et*. The semantic composition proceeds by *herself* taking *praised*, a relation, as its argument. Contrary to Theories 1/2, then, *herself* is the function and *praised* the argument. Moreover, the function-argument order is different than the order under Theories 1/2. Given the semantic theory, the function *herself* follows its argument *praised*. The only way to satisfy Complement Prominence, then, is for the function to Prosodically Subordinate to the argument. Prosodic Subordination results in (13). No other prosody is predicted to be felicitous.

(13) PRAISED herself

I can now move to test the behavior of reflexive anaphors in the environments specified above. In all examples (14), (15) and (16), the relevant VPs require F-marking on neither *praised* nor *herself* (under all three theories). In (14) and (15) *praised herself* is Given without the need of F-marking. In (16), F-marking the VP node is the only option that satisfies Cyclic Domains. It can safely be assumed, then, that Complement Prominence applies to determine the prosody of the relevant VPs. As can be seen, in all cases the reflexive necessarily subordinates to the verb and never receives a pitch accent. This is exactly the prediction of the semantic theory.[89]

[89] Irene Heim (p.c.) raises the question of the prosodic properties of quantificational DPs: whereas, like reflexives, they are not elements of type *e*, they appear to behave prosodically like referential DPs. She proposes that part of the answer could be that whereas reflexive anaphors are interpreted in-situ, quantificational DPs are subject to covert movement. The next step, then, should be an explicit account of the interaction between covert movement and Complement Prominence. An alternative could be that there is actually no covert movement, but

(14) A: I asked everyone to praise herself. What did Zelda do?
B1: She PRAISED herself.
B2: She praised herSELF. #
B3: She PRAISED herSELF. #
B4: She PRAISED herSELF. #

(15) A: Lucie praised herself.
B1: No, ZELDA PRAISED herself.
B2: No, ZELDA praised herSELF. #
B3: No, ZELDA PRAISED herSELF. #
B4: No, ZELDA PRAISED herSELF. #

(16) A: What did Zelda do?
B1: She PRAISED herself.
B2: She praised herSELF. #
B3: She PRAISED herSELF. #
B4: She PRAISED herSELF. #

3.5.3 Against an alternative

This section discusses the possibilities of Theories 1 and 2 to account for the data in the previous section. I will sketch the outlook of a possible alternative and present its problems.

The basic intuition that Theories 1 and 2 could make use of is that reflexives are anaphors, so always Given. Roughly speaking, anaphors carry the presupposition that their referents have been introduced in the context, that they are part of some salient assignment function. Indeed, Schwarzschild's definition of Givenness for elements of type *e* in (17) simply restates the presuppositions of anaphors. Given the framework assumed in section 3.2 for Theories 1 and 2, coreference is only available if U_e and its antecedent are co-indexed. Sauerland's (2005, 379) formulation in (18) makes the link to co-indexing explicit. Notice that, like Wagner (2005), Sauerland directly interprets G(ivenness)-features.

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quantificational DPs are attached higher in the clause (either because they are base-generated there or through overt QR). In that case, the derivational history is different than that of sentences with definite DPs, and it is expected that the difference in derivational historty will be reflected in the prosody, particularly in the perceived grouping of the relevant elements, i.e. in the position of foot boundaries and the strength of boundary ranks. I know of no detailed investigation of the prosody of sentences with quantificational DPs. I have to leave further exploration of these ideas for some future occasion.

(17) *Givenness*
An utterance U counts as *Given* iff it has a salient antecedent A and, if U is of type e, then A and U corefer.

(18) $[\![G]\!] = \lambda x. \exists i.g(i)=x. x$

Both (17) and (18) are intended to capture all elements of type *e*. The difference between anaphors and other referential DPs is that anaphors will always count as Given, since salience of an antecedent is part of their requirements of use irrespective of Givenness.

Theories 1 and 2, then, could make use of this observation, and claim that anaphors will always be deaccented, since they are always Given. For an example like (19), then, the idea would be that the prosody of the VP is determined not by Complement Prominence, but by Focus Prominence. The syntactic structure of the VP should be as in (20), where *praised* is F-marked, since it is new, but *herself* is not, since it is Given. *herself*, then, subordinates to *praised*.

(19) A: What did Zelda do?
B: She PRAISED herself.

(20) $[_{VP} [_{V} \text{ praised}]_F \text{ herself}]_F$

There are two issues of implementation regarding this idea. The first one has to do with the application of (17)/(18) on reflexive anaphors. According to Theory 1, the pragmatic theory, (19B) allows the referential construal in (21), according to which *herself* is co-indexed and, so, coreferential with Zelda. *herself*$_1$, then, is Given under (17)/(18).

(21) $[_S \text{ She}_1 [_{VP} [_{V} \text{ praised}]_F \text{ herself}_1]_F]$, where g(1)=Zelda

A question arises for the case of bound reflexives. Recall that the pragmatic theory also generates the bound construal in (22). For the syntactic theory, it is the only possible one.

(22) $[_S \text{ She}_1 [_{VP^*} \beta_1 [_{VP} [_{V} \text{ praised}]_F \text{ herself}_1]_F]]$

Moreover, reflexive anaphors bound by quantificational antecedents show the exact same behaviour with examples with referential antecedents. This is shown in (23)-(25).[90]

[90] The data in (23)-(25) pose, of course, no challenge to the semantic theory, for which *herself* in (23)-(25) is no different than *herself* in (14)-(16) above.

(23) A: I asked every director to praise herself. What did every actress do?
B1: Every actress PRAISED herself.
B2: Every actress praised herSELF. #
B3: Every actress PRAISED herSELF. #
B4: Every actress PRAISED herSELF. #

(24) A: Every director praised herself.
B1: No, every ACTRESS PRAISED herself.
B2: No, every ACTRESS praised herSELF. #
B3: No, every ACTRESS PRAISED herSELF. #
B4: No, every ACTRESS PRAISED herSELF. #

(25) A: What did every actress do?
B1: Every actress PRAISED herself.
B2: Every actress praised herSELF. #
B3: Every actress PRAISED herSELF. #
B4: Every actress PRAISED herSELF. #

The problem with evaluating Givenness for bound reflexives is that they do not straightforwardly *refer*. Moreover, in examples like (25), there is nothing that they can actually *co*refer with. Several issues and possibilities arise at this point. Let me, however, defer this discussion to the next section, where similar issues arise for pronominal anaphors. For argument's sake, I will continue this section assuming that the issues can be solved and that the reflexive anaphors in all the examples in (14)-(16) and (23)-(25), can be considered to be Given.

The second issue of implementation that arises has to do with the principle regulating the domains of focus. Recall that the aim is to derive a syntactic structure in which *praised* is F-marked and *herself* is not. Cyclic Domains does not derive such a structure. Take again the example of the VP in (19). As shown in (26), the only candidates that are Given are the ones in which the VP is F-marked. Importantly, the candidates (26b) and (26e) in which *praised* is F-marked and *herself* is not, are not Given.[91]

[91] The candidates in (26a)-(26c) are, of course, only available for the pragmatic theory of reflexive anaphors.

(26)	Syntactic structure	Existential F-Closure	Given
a.	$[_{VP}$ praised herself$_1]$	∃x. praised(Zelda)(x)	*
b.	$[_{VP}$ $[_{V}$ praised$]_F$ herself$_1]$	∃R∃x. R(Zelda)(x)	*
c.	$[_{VP}$ praised herself$_1]_F$	∃P∃x. P(x)	✓
d.	$[_{VP^*}$ β_1 $[_{VP}$ praised herself$_1]]$	∃x. praised(x)(x)	*
e.	$[_{VP^*}$ β_1 $[_{VP}$ $[_{V}$ praised$]_F$ herself$_1]]$	∃R∃x. R(x)(x)	*
f.	$[_{VP^*}$ β_1 $[_{VP}$ praised herself$_1]]_F$	∃P∃x. P(x)	✓

To predict the required structure one should move to Schwarzschild's original definition of Givenness, that required all constituents to be checked for Givenness. Given Domains is repeated in (27).

(27) *Given Domains*
If a constituent is not F-marked, it is Given.

According to (27) *praised* and *herself* should be checked individually for Givenness. As accepted above, *herself* will turn out to be Given and remain unmarked. *praised* obviously won't be Given, since nothing entails that someone praised someone, and will be F-marked. The VP will also be F-marked since the antecedent does not entail *∃R∃x.R(Zelda)(x)* or *∃R∃x.R(x)(x)*. The account, then, predicts that the syntactic structure of *praised herself* in (19B) is one of the ones in (28).

(28) a. $[_{VP}$ $[_{V}$ praised$]_F$ herself$_1]_F$
b. $[_{VP^*}$ β_1 $[_{VP}$ $[_{V}$ praised$]_F$ herself$_1]]_F$

Dropping Cyclic Domains and returning to Schwarzschild's Given Domains leaves us with the arguments in favour of Cyclic Domains presented in Chapter 2. One of those arguments is particularly relevant in the current discussion. Recall that as argued in Chapter 2, the VP *praised Zelda* in (29) does not allow deaccenting of *Zelda* (unless one accommodates a suitable antecedent, see section 2.4.3.3.1, in Chapter 2). The solution was to assume Cyclic Domains; if so, the only candidate that satisfies Cyclic Domains is one in which only the VP node is F-marked. If so, Complement Prominence is predicted to determine the prosody within the VP. The available prosodies in (29B1) and (29B2) confirm the prediction.

(29) A: What did Zelda's father do?
B1: He praised ZELDA.
B2: He PRAISED ZELDA.
B3: He PRAISED Zelda. #

If, on the other hand, one assumes Given Domains, the syntactic structure of the VP will be as in (30). *praised* will be F-marked, since it is not Given. *Zelda*, however, won't be F-marked, since it is obviously Given. The problem now is that (20) is exactly parallel to (28), and it is unclear why they should differ in their prosodic realization. Proponents of Theories 1/2, then, should explain why *Zelda* is not Given in (30), but *herself* is Given in, e.g., (19).

(30) $[_{VP}\ [_{V}$ praised$]_{F}$ Zelda$]_{F}$

Once again, let me assume for the sake of the argument that this challenge can be met, and move to present a final problem with the idea discussed in this section. As shown in the previous section, the syntactic and pragmatic theories of reflexive anaphors predict that the anaphor will be more prominent than the verb they are an argument of in cases where Complement Prominence determines prosody. In this section I have been trying to argue for example (19) that the VP *praised herself* is not subject to Complement Prosody, but to Focus Prominence. Focus Prominence (or its equivalent in the other focus theories discussed in the previous chapter) is the only principle that could force a constituent to obligatorily subordinate to its sister. For Focus Prominence to apply there should be an asymmetry in F-marking between the two sister constituents, in this case *praised* should be F-marked and *herself* not (or *herself* G-marked and *praised* not). In example (19) where *praised* is obviously not Given, one can generate an asymmetry the moment it is shown that *herself* is Given (modulo Given Domains). A new problem arises, however, the moment one move to contexts in which *praised* is Given. These are the examples in (15) and (16), repeated here in (31) and (32). In these cases, too, *herself* obligatorily subordinates to *praised*.

(31) A: I asked everyone to praise herself. What did Zelda do?
B1: She PRAISED herself.
B2: She praised herSELF. #
B3: She PRAISED herSELF. #
B4: She PRAISED herSELF. #

(32) A: Lucie praised herself.
B1: No, ZELDA PRAISED herself.
B2: No, ZELDA praised herSELF. #
B3: No, ZELDA PRAISED herSELF. #
B4: No, ZELDA PRAISED herSELF. #

The problem is that in both (31) and (32), both *praised* and *herself* are Given. The

syntactic structure of the VP is shown in (33) (in the case of (31) the VP node will have to be F-marked too. This F-marking is irrelevant here). Since no F-marking is involved Complement Prominence is predicted to determine the prosody of the VP, giving rise to the wrong prediction for the pragmatic and the syntactic theory.[92]

(33) [$_{VP}$ praised herself]

I conclude, then, that, at this point, the account in the previous section that makes crucial use of Cyclic Domains and the semantic theory of reflexive anaphors is the only viable explanation of the relevant facts.

3.6 Reflexive anaphors and Given Domains

In the previous section I briefly considered the syntactic and the pragmatic theories under a focus theory that assumes Schwarzschild's (1999) Given Domains, instead of Cyclic Domains. This was their only possibility to capture the prosodic pattern in cases where Complement Prominence applies. The question arises to what extend the result of section 3.4 (i.e. that only the semantic theory predicts the full prosodic pattern in cases where F-marking affects prosody) depends on assuming Cyclic Domains. This section answers this question by considering some of the key examples of section 3.4. Each sub-section is devoted to one of the competing theories of reflexive anaphors. I check the theories assuming a focus theory that is identical to the one presented in section 3.3, with one exception. Cyclic Domains is substituted with Schwarzschild's Given Domains, repeated in (1), so that every constituent is required to be checked for Givenness.

(1) *Given Domains*
If a constituent is not F-marked, it must be given.

It is shown that even if one assumes Given Domains instead of Cyclic Domains, the syntactic and pragmatic theories fails, and the semantic theory succeeds.

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[92] Adopting Wagner's (2005) r-Givenness cannot help. Assume that the reflexives in the target utterance and the antecedent can differ. In this case, *praised* will be r-Given, and *herself* will not be. An asymmetry is, indeed, produced, but one that predicts *praised* to subordinate to *herself*. If the reflexives in the target utterance and the antecedent cannot contrast, neither *praised* nor *herself* are r-Given, and Complement Prominence is predicted to apply.

3.6.1 Given Domains and the semantic theory

This section shows that the success of the semantic theory does not depend on assuming Cyclic Domains. The only relevant difference with the derivations in section 3.4, is that now the reflexive and the subject themselves need to be checked for Givenness. Consider, first, an example with obligatory stress on *herself*, as in (2).

(2) A: Lucie praised Oscar.
B1: No, ZELDA praised herSELF.
B2: No, ZELDA praised herself. #

Given Domains requires *herself* to be checked for Givenness. The Existential F-Closure of *herself* is $\exists R \exists x.R(x)(x)$, which is not entailed by (2A). *herself* will have to be F-marked, and by Focus Projection, it will project up to the top grid line and receive a pitch accent, as required. *Zelda* is new, so it will be F-marked too. In examples, like (3), *herself* is Given, since (3A) entails $\exists R \exists x.R(x)(x)$. No F-marking is needed, then, and *herself* will remain unaccented.

(3) A: Lucie praised herself.
B1: No, ZELDA praised herself.
B2: No, ZELDA praised herSELF. #

Example (4) was the crucial example that distinguished the semantic theory from the syntaactic and pragmatic ones. *herself* in (4) will have to be F-marked for the same reasons as above in (2). *Zelda* can escape F-marking, not only because it is Given, but also because it does not need to be F-marked for the sentence to be Given; *Oscar praised Zelda* entails $\exists Q.Q\text{-praised}(Zelda)$.

(4) A: Oscar praised Zelda.
B1: No, ZELDA/Zelda praised herself. #
B2: No, ZELDA praised herSELF.
B3: No, Zelda praised herSELF. ?

The semantic theory, then, is adequate even in a theory that assumes Given Domains. This was shown for three key examples. The interested reader can verify that the same is true for all examples discussed in section 3.4.

3.6.2 Given Domains and the pragmatic theory

The pragmatic theory failed to derive the example in (4) under the focus theory of section 3.2. The same is true even if one assumes Given Domains. Consider the constituents of (4B) in (6) under the referential construal of *herself* in (5), which is possible in the pragmatic theory. The reflexive *herself* is Given, so it doesn't have to be F-marked. Moreover, it does not need to be F-marked for constituents containing it to be Given. So, *herself* will remain unaccented, contrary to fact.

(5) Zelda$_1$ praised herself$_1$

(6)	Constituent	Existential F-closure	Given
a.	[$_S$ Zelda$_1$ praised herself$_1$]	praised(Zelda)(Zelda)	*
b.	Zelda$_1$		✓
c.	[$_{VP}$ praised herself$_1$]	∃x.praised(Zelda)(x)	✓
d.	[$_V$ praised]	∃x∃y.praised(x)(y)	✓
e.	herself$_1$ = g(1) = Zelda		✓

The only possibility for the sentence to be Given, is to F-mark *Zelda*, even if *Zelda* herself is Given. The pragmatic theory, then, predicts the syntactic structure in (7a) with the prosodic pattern in (7b), in other words, the only unavailable pattern in (4B).

3.6.3 Given Domains and the syntactic theory

The syntactic theory only allows binding construal for reflexive anaphors. Given Domains requires that the reflexive itself is checked for Givenness, i.e. the reflexive needs to be checked in a domain in which it is not bound. In order to check the theory, then, one needs to be explicit about when a bound variable can be considered to be Given. As mentioned in section 3.5, the problem with that seems to be that bound pronouns do not refer, but definition of Givenness for elements of type *e* is based on coreference. Before going into the facts, then, I will make a more specific proposal about how Givenness should be evaluated for bound pronouns.

3.6.3.1 Given indices

The lesson from the discussion in section 3.5 is that, for the syntactic theory to stand a chance to cover all the facts, it should predict that bound anaphors are *always*

Given. Reflexives deaccent even in out-of-the-blue contexts, as in (7).

(7) Every actress PRAISED herself.

So, *herself* should count as Given, even when there is apparently nothing that it can corefer with. An account of (7) in terms of the syntactic theory, then, should find a notion to replace 'corefer' in the definition of Givenness, and find a suitable antecedent so that the relevant notion holds between *herself* and its antecedent.

To meet the first requirement I will borrow Heim's (2008) definition of covaluation in (8).[93]

(8) *Covaluation*
Two DPs of type *e* are covalued in an utterance context c iff they have the same extension under every variable assignment that extends the assignment given in that context. i.e. α and β are covalued in an utterance context c iff $[\![\alpha]\!]^{c,g} = [\![\beta]\!]^{c,g}$ for all g such that $g_c \subseteq g$.

Two DPs that are co-indexed will always count as covalued, according to (8), since any extension of the contextual assignment function will affect them in the same way. The same is true for co-indexed bound variables as well. The two pronouns in (9a), will count as covalued in the syntactic structure in (9b).

(9) a. Every actress said that she likes her director.
b. Every actress β_1 said that she$_1$ likes her$_1$ director.

Let us, then, revise Givenness as in (10).

(10) *Givenness (revised)*
An utterance U counts as *Given* iff it has a salient antecedent A and
a. if U is of type e, then A and U are covalued.
b. otherwise: A entails the Existential F-closure of U, modulo ∃-type shifting.

The second requirement still needs to be met. The syntactic structure of (7), in (11), provides no antecedent for *herself* to be covalued with.

(11) Every actress β_1 praised herself$_1$.

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[93] Heim develops Covaluation for pronouns in order to achieve a version of Principle B that generalizes over variable-binding and coreference.

To meet the second requirement I will need to revise some of my earlier semantics about the syntax of binding. In section 3.2, I assumed that binding operators can freely adjoin to VPs.[94] I will now move to a system that links the presence of binding operators to movement of the subject. This is a system in the line of Heim and Kratzer (1998). I assume then, that subjects are generated VP-internally, as in (12a). Movement of the subject to a higher subject position generates a binding configuration, as in (12b). This is done through the insertion of a binding operator co-indexed with the moved DP, that will bind any co-indexed variables in its scope. The moved DP leaves behind a co-indexed trace.

(12) a. $[_{VP}\ DP_1\ [_{VP}\ V\ DP]]$
b. $[_{S}\ DP_1\ [_{VP^*}\ \beta_1\ [_{VP}\ t_1\ [_{VP}\ V\ DP]]]]$

To cover traces, the earlier Anaphor Rule is extended as in (13).

(13) *Anaphor and Traces Rule*
$[\![\text{herself}_1]\!]^g = [\![\text{her}_1]\!]^g = [\![t_1]\!]^g = g(1)$

To interpret the VP* with the adjoined binding operator, Büring's Binder Index Evaluation Rule, assumed earlier, is replaced with Heim and Kratzer's (1998, 96) Predicate Abstraction.

(14) *Predicate Abstraction*
If α is a branching node whose daughters are a binding operator β_1 and γ, then $[\![\alpha]\!]^g = \lambda x.\ [\![\gamma]\!]^{g[1 \rightarrow x]}$.

The insertion of the binding operator is linked to the index of the moved DP. To have quantificational DPs introduce a binding operator, then, I need to drop the assumptions that they are not indexed, and add the assumption that movement eliminates the index on quantificational DPs. The syntactic structure of (7) will, then, be the one in (15).

(15) Every actress β_1 t_1 praised herself_1.

(15) provides a suitable antecedent for *herself*, the coindexed trace. Since they are co-indexed, as they have to be to obtain the relevant bound interpretation, they will

[94] The decision was made because it made it to easier to cyclically compute the prosody of VPs for the syntactic and pragmatic theory in section 3.4, and to state generalizations about prosodic cycles. Let me disregard such issues here.

also be covalued. *herself*, then, counts as Given.

3.6.3.2 The data

I now go back to some of the data discussed in section 3.4. Given the revision of Givenness in the previous section, reflexive anaphors will always be Given. They only reason to F-mark them, then, is to ensure that some constituent containing them is Given. This is what happens, for example, with example (16).

(16) A: Lucie praised Oscar.
B1: No, ZELDA praised herSELF.
B2: No, ZELDA praised herself. #

The syntactic structure of the target sentence is the one in (17).

(17) $[_S$ Zelda$_1$ $[_{VP*}$ β_1 $[_{VP''}$ t_1 $[_{VP'}$ praised herself$_1$]]]]

The reflexive anaphor *herself$_1$* is Given since it is covalued with the co-indexed trace. The VPs *[$_{VP'}$ praised herself$_1$]* and *[$_{VP*}$ β_1 [$_{VP}$ t_1 [$_{VP'}$ praised herself$_1$]]]*, however, are not Given, so the reflexive must be F-marked.[95, 96] The only syntactic structure that satisfies Given Domains is the one in (18).

(18) $[_S$ $[$Zelda$_1]_F$ $[_{VP*}$ β_1 $[_{VP''}$ t_1 $[_{VP'}$ praised $[$herself$_1]_F$]]]]

In the case of example (19), the theory correctly predicts that *herself* will have to be F-marked, for the same reasons as above. As in section 3.4, however, the syntactic theory still fails to predict deaccenting of *Zelda*.

(19) A: Oscar praised Zelda.
B1: No, ZELDA/Zelda praised herself. #
B2: No, ZELDA praised herSELF.
B3: No, Zelda praised herSELF. ?

The syntactic structure in (20a) leaves *Zelda* with no F-marking. Its Existential F-

[95] For simplicity I disregard the VP'' *[$_{VP''}$ t_1 [$_{VP'}$ praised herself$_1$]]*.

[96] The account will also have to be counter-cyclic. If the first cycle is the VP' *[$_{VP'}$ praised herself$_1$]*, *herself* is not available for F-marking at the level of VP* [$_{VP*}$ β_1 [$_{VP''}$ t_1 [$_{VP'}$ praised herself$_1$]]], yet this the level at which the system realizes that F-marking the reflexive is obligatory. A proponent of the syntactic theory, then, would have to assume some non-cyclic system of prosody assignment.

Closure in (20b), however, is not entailed by (19A), and it is not licensed.

(20) a. $[_S$ Zelda$_1$ $[_{VP*}$ β_1 $[_{VP''}$ t_1 $[_{VP'}$ praised [herself$_1]_F]]]]$
b. $\exists$x.praised(x)(Zelda)

It is not even clear that the current theory can deal with examples like (21).

(21) A: Lucie praised herself.
B1: No, ZELDA praised herself.
B2: No, ZELDA praised herSELF. #

Consider the example assuming the indexing in (22).

(22) a. $[_S$ Lucie$_1$ $[_{VP*}$ β_1 $[_{VP''}$ t_1 $[_{VP'}$ praised herself$_1]]]]$
b. $[_S$ Zelda$_2$ $[_{VP*}$ β_2 $[_{VP''}$ t_2 $[_{VP'}$ praised herself$_2]]]]$

Assuming that there is no F-marking on the *herslf*$_2$, Given Domains is violated for S and VP', as shown in (23) (F-marking on *Zelda* is obligatory for the usual reasons).

(23)	Constituent	Existential F-closure	Given
a.	$[_S$ [Zelda$_2]_F$ $[_{VP*}$ β_2 $[_{VP''}$ t_2 $[_{VP'}$ praised herself$_2]]]]$	$\exists$x.praised(x)(x)	✓
b.	$[_{VP*}$ β_2 $[_{VP''}$ t_2 $[_{VP'}$ praised herself$_2]]]$	$\exists$x.praised(x)(x)	✓
c.	$[_{VP'}$ praised herself$_2]$	$\exists$x.praised(g(2))(x)	*
d.	$[_V$ praised]	$\exists$x$\exists$y.praised(x)(y)	✓
e.	herself$_2$		✓

The only way to satisfy Cyclic Domains, then, is to F-mark *herself*$_2$, as in (24). This, however, results in the infelicitous accent pattern in (21B2).

(24)	Constituent	ExistentialFlosure	Given
a.	$[_S$ [Zelda$_2]_F$ $[_{VP*}$ β_2 $[_{VP''}$ t_2 $[_{VP'}$ praised [herself$_2]_F]]]]$	$\exists$x$\exists$y.praised(x)(y)	✓
b.	$[_{VP*}$ β_2 $[_{VP''}$ t_2 $[_{VP'}$ praised [herself$_2]_F]]]$	$\exists$x$\exists$y.praised(x)(y)	✓
c.	$[_{VP'}$ praised [herself$_2]_F]$	$\exists$x$\exists$y.praised(x)(y)	✓
d.	$[_V$ praised]	$\exists$x$\exists$y.praised(x)(y)	✓

A possible way to fix the problem is to assume the indexing in (25).[97,98] If the

[97] But see Heim (1997) (cf. Sag 1976) for arguments from Antecedent Contained Deletion (ACD) that such re-use of variables should be prohibited. She proposes that principle in (i).

indexing in (25) is allowed, The VP' *[$_{VP'}$ praised herself$_1$]* is Given without F-marking on *herself$_1$*; its Existential F-Closure, *∃x.praised(g(1))(x)*, is entailed by the Existential F-Closure of the VP' in the antecedent.[99]

Kennedy (2004) argues for a system of indexing that deals with ACD but still allows co-indexing in cases like (25).

(i) *No Meaningless Coindexation*
If an LF contains an occurrence of a variable *v* that is bound by a node *a,* then all occurrences of *v* in this LF must be bound by the same node *a.*

[98] A second possible way to fix the problem with (21) would be to claim that constituents in which the variable is free are not relevant for Givenness licensing. The only relevant constituents, then, are the ones in (ii) that all satisfy Givenness without F-marking *herself$_2$*.

(ii)	Constituent	Existential F-closure	Given
a.	$[_S\ [\text{Zelda}_2]_F\ [_{VP*}\ \beta_2\ [_{VP''}\ t_2\ [_{VP'}$ praised $[\text{herself}_2]_F]]]]$	∃x∃y.praised(x)(y)	✓
b.	$[_{VP*}\ \beta_2\ [_{VP''}\ t_2\ [_{VP'}$ praised $[\text{herself}_2]_F]]]$	∃x∃y.praised(x)(y)	✓

This kind of solution is not possible in a framework that adopts Given Domains. What the solution tries to derive is that reflexive anaphors will be bound at the point their Givenness status becomes relevant. This is exactly what came for free, even for the syntactic and pragmatic theories, with the adoption of Cyclic Domains, and the syntax of binding assumed in section 3.2.1.1.

[99] Jacobson (2000) and Sauerland (2004) claim that focus on the reflexive might actually be possible in the case of (21). The difference is that it is the pronominal part that is accented. Consider the examples in (ia) (from Jacobson (2000)) and (ib) (from Sauerland (2004)).

(i) a. Every third grade boy loves himself, and every FOURTH grade boy loves HIMself.
b. John likes himself, and BILL likes HIMself.

Since stressing *him* and *self* are different in different environments, the felicity of (i) would be evidence for decomposing the reflexive anaphor into two semantically transparent parts. The behavior in (i), then, should be parallel to regular pronouns in comparable contexts. Compare the discussion in the next chapter. For early decompositional treatments of reflexives see Reinhart and Reuland (1991, 1993). More semantically transparent decompositional treatments can be found in Schlenker (2005), Lechner (2006), Reuland and Winter (2009). What is important to note here is that not all native speakers find the accent patterns in (i) felicitous. The speakers I consulted were generally ambivalent about (i), and rejected the examples in (ii) and (iii).

(ii) A: Lucie praised herself.
B: No, ZELDA praised HERself. #

(25) a. $[_S$ Lucie$_1$ $[_{VP*}$ β_1 $[_{VP''}$ t_1 $[_{VP'}$ praised herself$_1$]]]]
b. $[_S$ Zelda$_1$ $[_{VP*}$ β_1 $[_{VP''}$ t_1 $[_{VP'}$ praised herself$_1$]]]]

Section 3.6 has showed that the success of the semantic theory does not depend on adopting Cyclic Domains. It gives the right results even in a theory that assumes Given Domains. The syntactic and pragmatic theories, on the other hand, still fail, even if one drops Cyclic Domains, and adopts a theory based on Given Domains.

3.7 Reflexive anaphors and exhaustification

This section discusses the strengthened meanings of utterances with focused reflexive anaphors. It turns out that the semantic theory, for which I have been arguing for in the previous two sections, generates exhaustification implicatures that are too strong. This is shown in section 3.6.1. Section 3.6.2 argues that the issue is solved if some of the earlier assumptions about the generation of the exhaustification implicatures of focus are modified.

3.7.1 Exhaustified reflexives

Consider the example in (1). Uttered in a context in which Zelda, Max, Lucie, and Oscar are all the relevant individuals, (1B) carries the implicature that Zelda did not praise Zelda, Lucie and Max. Our focus theory predicts that *Oscar* will be the only F-marked element in (1B), as in (2).

(1) A: Zelda praised Lucie.
B: No, Zelda praised OSCAR.
(2) $[_S$ Zelda $[_{VP}$ praised $[_{DP}$ Oscar$]_F]$

In section 2.5.1, in Chapter 2, I attributed the existence of exhaustification

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(iii) A: I asked Lucie to praise herself. What did Zelda do?
B: She praised HERself. #

Given the facts in (ii) and (iii) it would be premature to say that the examples in (26) provide independent evidence for the semantic decomposition of reflexive anaphors. More empirical work is needed to determine the actual status of the examples in (i) in comparison to the ones in (ii) and (iii).

implicatures to the possibility of attaching at the sentence level an exhaustification operator *Exh* with the semantics in (3).

(3) Exh (C)(φ) = 1 if φ = 1 ⋀ ∀ψ∈C: ψ=1 → ψ= φ.

I followed Rooth (1992) assuming that C is a salient set of alternatives, subject to the constraint in (4).

(4) C ⊆ { p | p → ExFClo(φ) }

In the case of (1B), then, C will contain the propositions *Zelda praised Zelda*, *Zelda praised Lucie*, *Zelda praised Max*, *and Zelda praised Oscar*, since they all entail the Existential F-Closure of (2), *∃x.praised(x)(Zelda)*. Given the semantics in (3), (1B) ends up with the strengthened meaning in (5), which corresponds to the intuition started with at the beginning of this section.

(5) Zelda praised Oscar, and Zelda didn't praise Zelda, Zelda didn't praise Lucie, and Zelda didn't praise Max.

Consider next an example with a focused reflexive anaphor, as in (6). Given our focus theory, the syntactic structure of (6B) is the one in (7). Similarly to (1B), (6B) conveys the meaning that Zelda praised Zelda, and she praised no other relevant individual.

(6) A: Zelda praised Lucie.
B: No, Zelda praised herSELF.

(7) $[_S$ Zelda $[_{VP}$ praised $[_{DP}$ herself$]_F]$

According to the syntactic and the pragmatic theory, the Existential F-Closure of (7) is the same as that of (1B), *∃x.praised(x)(Zelda)* (for both binding and referential construals). C, then, contains the same propositions as in the case of (1B); *Zelda praised Zelda*, *Zelda praised Lucie*, *Zelda praised Max*, *and Zelda praised Oscar*. Given the semantics of *Exh*, (6B) ends up with the strengthened meaning in (8).

(8) Zelda praised Zelda, and Zelda didn't praise Oscar, Zelda didn't praise Lucie, and Zelda didn't praise Max.

Notice, now, that the semantic theory of reflexive anaphors predicts a different strengthened meaning for (6B). The Existential F-Closure of (7) under the semantic theory is $\exists Q_{eet,et}.Q$-*praised(Zelda)*. As shown in (9a), the propositions I have been

considering so far all entail this Existential F-Closure. But so do the propositions in (9b). The strengthened meaning of (6B), then, is predicted to be the one in (10).

(9) a. Zelda praised Zelda/ Zelda praised Lucie/ Zelda praised Max/ Zelda praised Oscar
→ $\exists Q_{eet,et}$.Q-praised(Zelda) (for Q = λRλx∃y.R(y)(x))

b. Zelda praised Zelda/ Lucie praised Zelda/ Max praised Zelda/ Oscar praised Zelda
→ $\exists Q_{eet,et}$.Q-praised(Zelda) (for Q = λRλx∃y.R(x)(y))

(10) Zelda praised Zelda, and Zelda didn't praise Oscar, Zelda didn't praise Lucie, and Zelda didn't praise Max, and Lucie didn't praise Zelda, and Max didn't praise Zelda, and Oscar didn't praise Zelda.

The problem is that native speakers do not understand (6B) to convey such a strong meaning. The intuition is supported by the example in (11). Let us call *Zelda praised Lucie* in A's utterance $claim_1$, *Lucie praised Zelda* $claim_2$, and the conjunction of the two the full claim. Recall from the discussion in section 2.5.3, that, in corrective contexts like the one in (11), it is the satisfaction of the Mismatch Hypothesis that regulates which of the claims in B's utterance are rejected. Roughly speaking, a claim in A's utterance is necessarily rejected if it contradicts the exhaustification implicatures of B's utterance. If the strengthened meaning of (11) is the one in (10), the full claim should necessarily be rejected; if either $claim_1$ or $claim_2$ were taken to be true, the Mismatch Hypothesis would be violated, since both propositions *Zelda praised Lucie* and *Lucie praised Zelda* are negated in (10). (11B), however, is not understood to reject the full claim (or just $claim_2$); it is understood to reject $claim_1$. This is predicted if the strengthened meaning of (11B) is the one in (8), rather than the one in (10).

(11) A: Zelda praised Lucie and Lucie praised Zelda.
B: No, Zelda praised herSELF.

The interpretation of examples with *only* also strengthens the conclusion that the value of C does not include propositions in which Zelda is praised. Consider the example in (12). (12) is true in a scenario in which Zelda praised Zelda, Lucie praised Zelda, and no other praising was done. This is expected if C includes the propositions in (13a), but not if it includes the propositions in (13b).

(12) Zelda only praised herSELF.

(13) a. {Zelda praised Zelda, Zelda praised Lucie, Zelda praised Max, Zelda praised Oscar}

b. {Zelda praised Zelda, Zelda praised Lucie, Zelda praised Max, Zelda praised Oscar, Lucie praised Zelda, Max praised Zelda, Oscar praised Zelda}

Notice that (13a) does not actually violate the constraint in (4), even under the semantic theory. In the discussion above I implicitly assumed that a proposition will necessarily be in C if it entails the Existential F-Closure of the target sentence and is build by material already introduced in the discourse. It is possible, however, that not all such propositions end up in C. Indeed, the basic intuition behind the introduction of C was that its value is set in context. It is possible, then, for, e.g., (12) that the context only allows propositions in C in which Zelda is doing some praising, and not propositions in which Zelda is being praised. The challenge that this account faces is that the choice of C is more restricted than what it would allow. It is not clear, for example, why *only* in (12) is never understood to quantify over any subset of (13b) other than (13a); for instance, it can never be understood to quantify over the set in (14). If it could, (12) would be predicted to be judged true in a scenario in which Zelda praised Zelda, Zelda praised Lucie, and no other praising was done. This is never so. To sum up, it is not clear why (13a) is a possible value for C, but (14) is not.

(14) {Zelda praised Zelda, Lucie praised Zelda, Max praised Zelda, Oscar praised Zelda}

3.7.2 Association with the Current Question

To solve this problem for the semantic theory, I will reject the claim that *only* and *Exh* are subject to the constraint in (4). Notice, that in the theory of association with focus I have been assuming so far, the constraint in (4) is the only (albeit indirect) link between an operator like *only* and the focus structure of its prejacent. Rejecting (4) equals to claiming that operators like *only* do not actually associate with focus. A number of authors have argued for this claim (Rooth 1992, von Fintel 1994, Roberts 1996, 2000, Beaver and Clark 2003, 2008). Analyses of this kind face two obvious questions; i. what determines the value of C, and ii. how is apparent sensitivity to focus explained. In this section I will present a simplified version of the analysis in Beaver and Clark (2008) and show how -with the help of one additional assumption- it solves the problem of the exhaustification implicatures of stressed reflexive anaphors.

Beaver and Clark (2008) assume a model of discourse structure based on work

by Roberts (1996, 2004).[100] Following Stalnaker (1972), it is assumed that the goal of the interlocutors in a discourse is to answer the question *What is the way things are?*. Discourse, then, proceeds with narrowing down the context set, i.e. the set of possible worlds compatible with what is taken for granted by the interlocutors. Roberts develops a model of the *strategies* developed by interlocutors in order to achieve this goal. Each utterance of an interlocutor (a *move*) is part of such a strategy. Strategies primarily involve sequences of questions. If, for example, one wants to know what happened at a certain meeting (*What happened at the meeting?*), he can go about answering this question by first developing sub-goals. Sub-goals also take the form of questions, questions that are sub-questions of *What happened at the meeting?*, like *Who praised who?* and *Who did Zelda praise?*. An interlocutor can either answer the relevant question, or raise a sub-question, as part of a strategy to answer the original question. At any given point of a discourse, then, the interlocutors take one of the relevant questions to be their most immediate goal in the discourse. This question is the Current Question (CQ).

The relevant claim in Beaver and Clark (2008) is that exclusives like *only* conventionally associate with the Current Question. The value of C, then, is equated with the set of propositions denoted by the CQ. As I have already assumed in Chapter 2, the Hamblin-meaning of a question is the set of its possible answers in a given context. What *only* says, then, is that the prejacent is the only true answer in $[\![CQ]\!]^H$. Consider, for example, the discourse in (15).

(15) A: Who did Zelda praise?
B: Zelda only praised OSCAR.

In a context in which Zelda, Lucie, and Max are the only relevant individuals, the Hamblin-set of (15A) is the one in (16). The set in (16) is also the value of C. The usual semantics of *only* give rise to the reading in (17).

(16) $[\![(15A)]\!]^H$ = C = {Zelda praised Zelda, Zelda praised Lucie, Zelda praised Max}

(17) Zelda praised Lucie, and Zelda didn't praise Zelda, and Zelda didn't praise Max.

Since the prejacent is necessarily an answer to (15A), (15A) will be its antecedent for Givenness licensing; focus on *Lucie*, then, in (15B) is simply the result of Cyclic

[100] This is of course a very rough presentation of the discourse model. I refer to Beaver and Clark (2008), and the works cited there for detailed presentation and discussion.

Domains. The appearance of association with focus, then, is the result of the fact that the prejacent and the propositions in C should all have the same syntactic structure, since they are all answers to the same question.[101]

The role of F-marking is more crucial in examples with no explicit Current Question. In cases like this the Current Question should be accommodated. Since in Beaver and Clark's theory *only* conventionally associates with Current Question, accommodation is obligatory. F-marking, then, drives the accommodation process; since the prejacent is an answer to the Current Question, the accommodated Current Question should be such that its Existential Closure entails the Existential F-Closure of the prejacent. In an out-of-the-blue utterance of (15B), then, the accommodated question should be such that it entails $\exists x.praised(x)(Zelda)$, the Existential F-Closure of $[_S\ Zelda\ [_{VP}\ praised\ [_{DP}\ Oscar]_F]$.[102] (15A) is such a question. Accommodating it leads to the reading in (17), which is also the desired reading.

With this much in place I can go back to examples with reflexive anaphors, starting with (12), repeated here in (18). Given the semantic theory of reflexives, the syntactic structure of the prejacent in (18) is the one in (19a) with the Existential F-Closure in (19b).

(18) Zelda only praised herSELF.

(19) a. $[_S$ Zelda $[_{VP}$ praised $[_{DP}$ herself$]_F]$

b. $\exists Q_{eet,et}.Q\text{-praised(Zelda)}$

There are two questions whose Existential Closures entail (19b); (20a) with the Existential Closure in (20b), and (21a) with the Existential Closure in (21b).

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[101] Beaver and Clark do not assume Givenness, but a version of Question-Answer Congruence phrased in Alternative Semantics, their Focus Principle (Beaver and Clark 2008, 37) in (i).

(i) *Focus Principle*

Some part of a declarative utterance should evoke a set of alternatives containing all the Rooth-Hamblin alternatives of the CQ.

In the main text, I assumed that *only* is not part of the utterance checked for Givenness. The Focus Principle allows this without stipulation. A full comparison between the Focus Principle and Givenness will have to wait for another occasion.

[102] There exist alternative syntactic structures that would end up with the accent pattern *Zelda praised OSCAR*, like, e.g., $[_S\ Zelda\ [_{VP}\ praised\ \ Oscar]_F]$. In the absence of further clues, people tend to accommodate *Who did Zelda praise?* rather than *What did Zelda do?*. This could be an Economy effect, so that speakers assume the structure with the strongest Existential F-Closure. The principle of Avoid Ambiguity should also play a role, so that speakers tend to follow the general schema of the table in (23) in section 2.6.1.3.2.

(20) a. Who did Zelda praise?
b. ∃x.praised(x)(Zelda)
(21) a. Who praised Zelda?
b. ∃x.praised(Zelda)(x)

Accommodation of (20a) equates C with the set in (22a), that leads to the reading in (22b). As mentioned before, this is the intuitively correct reading of (18). Accommodating (21), however, leads to the reading in (23b). As mentioned before, this reading seems to be unavailable. If things are left to that, then, we face a problem similar to the one in the end of the previous section.

(22) a. C = {Zelda praised Zelda, Zelda praised Lucie, Zelda praised Oscar}
b. Zelda praised Oscar, and Zelda didn't praise Zelda, and Zelda didn't praise Lucie.
(23) a. C = {Zelda praised Zelda, Lucie praised Zelda, Oscar praised Zelda}
b. Zelda praised Zelda, Lucie didn't praise Zelda, and Oscar didn't praise Zelda.

Adopting the idea of association with the Current Question, allows us to make a claim about why (21a) is not accommodated. Given association with the Current Question, accommodation of a question like (20a) or (21b) is reduced to the availability of Question-Answer pairs, like the ones in (24) and (25).

(24) A: Who did Zelda praise?
B: Zelda praised herSELF.
(25) A: Who praised Zelda?
B: Zelda praised herSELF. ?

Even though Cyclic Domains is satisfied in both cases, there is an asymmetry between (24) and (25); speakers of English detect some degree of oddness about (25B), that is never there in the case of (24B). I claim that the oddness is a result of the presuppositions of questions like (25A). Consider first the example in (26). It has been noted that (26) is odd in a context in which Zelda praised Zelda and no one else praised her, even though it is strictly true in that context. (26), then, seems to carry the presupposition that someone other than Zelda praised Zelda.

(26) Zelda was praised.

The oddness of (25B) follows if (25A) carries the same presupposition as (26). As

Guerzoni (2003) shows in her treatment of presuppositions in questions and question-answer pairs, in case Speaker B does not share a presupposition of the question asked by speaker A, speaker B cannot answer A's question by uttering a sentence that contradicts this presupposition. Felicitous discourse will only proceed after Speaker B has voiced his objection and the two interlocutors have agreed on what assumptions they share, i.e. have established what is common knowledge. The oddness in (25), then, results from the fact that Speaker B has failed to signal his objection to what Speaker A takes us common knowledge, i.e. that someone other than Zelda praised Zelda (or possibly: if someone praised Zelda, someone other than Zelda praised Zelda). I do not have a full account on why (25A) would carry such a presupposition and (24A) would not. Perhaps even the term 'presupposition' is misleading and one needs to make sure that the Hamblin-set of (25A) does not include the proposition that Zelda praised Zelda. In that case, (25B) is accepted as an answer to (25A) only after an implicit *Nobody did* has been added by the addressee. In any case, the next step of the argument is that speakers of English do not accommodate the question *Who praised Zelda* on the basis of $[_S$ *Zelda* $[_{VP}$ *praised* $[_{DP}$ *herself*$]_F]$, either because the prejacent is not a congruent answer to that question, or because it leads to contradictions regarding the common ground; i.e. accommodating *Who praised Zelda* on the basis of a structure denoting the proposition of Zelda praised Zelda signals that the speaker both believes that someone other than Zelda praised Zelda and that it was Zelda that praised Zelda. If this line of thinking can be maintained, then the question in (24A) is the only candidate for Current Question. Accommodating that question is obligatory, given that *only* conventionally associates with the Current Question, and C is equated with the Hamblin-set of (24A), giving rise to the correct reading.

Consider next the example in (27), repeated from (6). Recall that (27B) has the strengthened meaning in (28). I claim that (27B) generates a strengthened meaning that is exactly the same as that of the corresponding example with *only* in (18), because *Exh* shares with *only* the property of conventionally associating with the Current Question.

(27) A: Zelda praised Lucie.
B: No, Zelda praised herSELF.

(28) Zelda praised Zelda, and Zelda didn't praise Oscar, Zelda didn't praise Lucie, and Zelda didn't praise Max.

The syntactic structure of (27B) is the one in (29). It is the result of the process of satisfying Cyclic Domains in the usual manner, with (27A) acting as the antecedent

for Givenness licensing. After attachment of *Exh*, (29) is the prejacent of *Exh*, and the basis for accommodation of the Current Question. The Existential F-Closure of (29) in (30) is the same as the one relevant for example (18). Exactly the same considerations used above, then, allow accommodation of *Who did Zelda praise* and do not allow accommodation of *Who praised Zelda*. Since, C is equated with the Hamblin-set of *Who did Zelda praise* the strengthened meaning is the one in (28).

(29) $[_S$ Zelda $[_{VP}$ praised $[_{DP}$ herself$]_F]$
(30) $\exists Q_{eet,et}.Q\text{-praised(Zelda)}$

The account of exhaustification presented in this section also allows us to say something about example (38) in section 3.4.2, repeated here in (31). Recall that the semantic theory of reflexive anaphors was the only theory that predicted (31B3) to be felicitous in the context of (31A); *Oscar praised Zelda* entails $\exists Q_{eet,et}.Q\text{-praised(Zelda)}$, for Q=PASS. (31B2), which is also felicitous, also satisfies Cyclic Domains, since *Oscar praised Zelda* entails $\exists Q_{eet,et}\exists x.Q\text{-praised}(x)$.

(31) A: Oscar praised Zelda.
B1: No, ZELDA/Zelda praised herself. #
B2: No, ZELDA praised herSELF.
B3: No, Zelda praised herSELF. ?

The question that was left open was why (31B3) does not block (31B2), since $\exists Q_{eet,et}.Q\text{-praised(Zelda)}$ entails $\exists Q_{eet,et}\exists x.Q\text{-praised}(x)$, and should by favored by Maximize Focus Presupposition. Consider (31B3) under the light of the current discussion. Since (31B3) is no different than (27B) above, its strengthened meaning will also be the one in (32). Note that the excluded alternatives in (32) say nothing about the truth of Speaker A's rejected claim, and this seems to result in the slight oddness of (31B3).

(32) Zelda praised Zelda, and Zelda didn't praise Oscar, Zelda didn't praise Lucie, and Zelda didn't praise Max.

A possible way to capture this intuition is to pose a requirement on accommodation. The distribution of F-marking in the syntactic structure of (31B3) is determined on the basis of (31A). The same syntactic structure is used to accommodate the Current Question, as required by *Exh*. I tentatively propose the following constraint on accommodation of the Current Question.

(33) *Constraint on the accommodation of the Current Question*
The antecedent for Givenness licensing should be a member of the Hamblin-set of the Current Question.

The constraint is not satisfied in the case (31B3), since (31A), the antecedent for Givenness licensing is not a member of the Hamblin-set of the accommodated question in (34).

(34) a. Who did Zelda praise?
b. {Zelda praised Zelda, Zelda praised Oscar, Zelda praised Lucie, Zelda praised Max}

The constraint is satisfied in the case of (31B2). The accommodated Current Question in the case of (31B2) is the one in (35a) with the Hamblin-set in (35b), which contains *Oscar praised Zelda*. As shown already in sections 2.5.3 and 2.6.2.3, then, Economy can be violated in some cases in order to facilitate the coherence of a discourse. The same is true here.

(35) a. Who praised who?
b. {Zelda praised Zelda, Zelda praised Oscar, Zelda praised Lucie, Zelda praised Max, Oscar praised Oscar, Oscar praised Zelda, Oscar praised Lucie, Oscar praised Max, Lucie praised Lucie, Lucie praised Zelda, Lucie praised Oscar, Lucie praised Max, Max praised Max, Max praised Zelda, Max praised Oscar, Max praised Lucie}

The constraint in (33) is not an absolute constraint on the felicity of discourses. It is rather one of the many principles that maintain discourse coherence, and it can be violated when other principles come into play. Consider, for example, the same discourse in (31), in a situation in which Speaker B knows that Oscar didn't praise Zelda, that Zelda praised Zelda, and that Zelda didn't praise anyone else. Even though (31B2) would satisfy the constraint in (33), the speaker can obviously not commit to the strengthened meaning it gives rise to, i.e. the speaker cannot commit to Max not having praised Oscar. The only possibility for Speaker B in that situation, then, is to fall back on (31B3).

3.8 Two sources for reflexivization

I mentioned in section 3.6.1 that Reinhart and Reuland (1991) and Reinhart and Reuland (1993) propose two possible ways in which reflexive anaphors (in R&R actually the *self* part of reflexive anaphors) lead to reflexive interpretations. Reinhart and Reuland (1993) effectively treats them as reflexivizing functions, as in the 'semantic theory' of reflexive anaphors argued for in this chapter. Reinhart and Reuland (1991) treat *self* as a relational noun that expresses identity between the verb's arguments. Reuland (2001) pursues the line in Reinhart and Reuland (1991) and argues that *self* in English and Dutch reflexive anaphors is interpreted as an identity predicate adjoining to the verb. This section discusses shortly the properties of the reflexive anaphor *o eaftos tu* 'the self his' in Greek and argues that it fits the relational-noun analysis. Section 3.7.3.1 provides the basics of an analysis of the Greek reflexive. Section 3.7.3.2 presents two so far unnoticed differences between Greek and English reflexive anaphors. It is argued that both are explained if Greek reflexives fall under the relational analysis and English reflexives are reflexivizing functions, thus fundamentally teasing apart these two perspectives on reflexives.

3.8.1 The syntax and semantics of the Greek reflexive anaphor

A simple example of a sentence with a reflexive anaphor in Greek is given in (1). Like English reflexives, the Greek anaphor is subject to a c-command requirement, as shown in (2) has to be bound by a local antecedent, as shown in (3), and doesn't allow discourse anaphoric readings, as shown in (4).

(1) I Maria penepse ton eafto tis.
the Mary praised the self her
"Mary praised herself."

(2) * O pateras tis Marias penepse ton eafto tis.
the father the Mary.gen praised the self her
"Mary's father praised herself."

(3) * I Maria ipe oti o eaftos tis tha fiji.
the Mary said that the self her will go
"Mary said that she will leave."

(4) * O Janis penepse ton eafto tis.
the John praised the self her
'John praised her.'

Anagnostopoulou and Everaert (1999) provide a detailed syntactic analysis of *o eaftos tis* within the Reflexivity framework of Reinhart and Reuland (1993). Instead of explaining the distribution of anaphors by posing principles that regulate their locality requirement, the binding principles in the Reflexivity framework pose requirements on the predicates the anaphors are arguments of. Condition A of Reflexivity is given in (5).[103] It is based on the definitions in (6) and (7).

(5) *Condition A*
A reflexive-marked predicate is reflexive.

(6) *Reflexive marked predicates*
A predicate is reflexive-marked iff either the predicate is lexically reflexive or one of its arguments is a SELF anaphors.

(7) *Reflexive predicates*
A predicate is reflexive if two (or more) of its arguments are co-indexed.

Anaphors like English *herself* that force reflexive interpretations are taken to be SELF-anaphors. Anagnostopoulou and Everaert take the properties in (1)-(4) to mean that *o eaftos tis* is an element with the feature specification +SELF.[104] As such, it reflexive marks the predicate it is an argument of and the predicate is subject to Condition A that requires that the predicate is reflexive. Condition A already derives the properties in (2)-(4); it will be violated in (2) and (3) because *tis Marias* and *o eaftos tis* are not arguments of the same predicate; it will be violated in (4) because in order to interpret the anaphor discourse anaphorically, one needs to contra-index it to the subject. The availability of (1), however, is not straightforwardly derived. For Condition A to be satisfied *i Maria* and *o eaftos tis* should bear the same index. Iatridou (1988) gives several arguments, however, that the subject is not co-indexed with the full DP *o eaftos tis*, but rather with the pronominal possessor inside it, as in (8). Anagnostopoulou and Everaert follow Iatridou in assuming (8). Indexing the possessive pronoun gains plausibility given the fact that the Greek anaphor has the structure of a regular referential expression. The structure of the complex Greek anaphor according to Anagnostopoulou and Everaert is the one in (9). *eaftos* in (9) is

[103] Condition A in (5) refers to *syntactic* predicates. See A.2 for a short discussion.

[104] Anagnostopoulou and Everater's main claim is that *o eaftos tis* is not only +SELF, but also +R, thus instantiating a gap in the initial typology of Reinhart and Reuland's typology.

a regular relational noun that moves to a functional projection inside the DP (the index *i* on *eaftos* marks the movement dependency; it is not a referential index).

(8) I Maria$_1$ penepse [ton eafto tis$_1$]$_2$

(9) [$_{DP}$ [$_D$ o] [$_{FP}$ [$_F$' [$_F$ eaftos$_i$] [$_{NP}$ tu [$_{N'}$ [N e$_i$]]]]]]

Given the indexing in (8), (1) should actually come out as a violation of Condition A, since the two arguments of *penepse* are not coindexed. In order to rule (1) in, Anagnostopoulou and Everaert assume that *eaftos* incorporates into the verb, as in (10). The result of incorporation is the formation of a complex-predicate whose first argument is the pronominal possessor. The two arguments of the predicate are now coindexed and the reflexive-marked predicate is reflexive.

(10) I Maria$_1$ eafto$_i$-penepse [ton t$_i$ tis$_1$]$_1$

The incorporation analysis of *eaftos* is forced within the Reflexivity framework. Notice, however, that it does more than simply allowing the reflexive interpretation of (1). Actually, it goes a long way in explaining the distribution of *o eaftos tis*. The incorporation analysis predicts the availability of *o eaftos tis* in the subject position of psych-verbs, as shown in (11), and it's unavailability in adjunct positions, as shown in (12), and in position of the goal argument in double object constructions, as shown in (13). It is beyond the scope of this section to give a full exposition of how and why incorporation explains the facts in (11)-(13). I refer the interested reader to Anagnostopoulou and Everaert's paper. In what follows, I will adopt the incorporation analysis of *eaftos*.

(11) O eaftos tis tis aresi tis Marias.
the self her her.clitic likes the Mary.gen
'Herself appeals to Mary.'

(12) * I Maria idhe ena fidhi dhipla ston eafto tis.
the Mary saw a snake next to-the self her
'Mary saw a snake next to herself.'

(13) * I Maria edikse tu eaftu tis tin fotografia.
the Mary showed the self.gen her the picture
'Mary showed herself the picture.'

When discussing the semantic theory of of reflexive anaphors, it was shown that the basic effects of the binding Condition A in English are derived by simply assuming that reflexive anaphors are reflexivizing functions. Anagnostopoulou and Everaert do not provide the semantics of incorporation of *eaftos*. In what follows I will

make a first proposal about what those semantics should be like. The two basic questions are what are the semantics of *eaftos* and how does *eaftos* combine with the predicate. As for the first, I assume that, unlike English *self*, *eaftos* is indeed a relational noun that denotes identity, as in (14).

(14) $[\![\text{eaftos}]\!] = \lambda x \lambda y.\ y = x$

To interpret incorporation of *eaftos* into the predicate, I extend Heim and Kratzer's (1998, 65) Predicate Modification rule in (15) so that it applies to relations, as in (16).[105]

(15) *Predicate Modification*
If α is a branching node, {β, γ} is the set of α's daughters,, and $[\![\beta]\!]^g$ and $[\![\gamma]\!]^g$

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[105] (16) cannot explain all instances of incorporation of relational nouns, like, e.g., the Mohawk case in (ib) (Anagnostopoulou and Everaert 1999). The meaning of [[face-wash]] is *λxλy. y praised x & y is x's face*, which is clearly the wrong result. Van Geenhoven (1998) proposes the rule for incorporation of properties in (ii) (slightly revised) (cf. Chung & Ladusaw's (2004) Restrict). (iii) is a variant of (ii) for cases of incorporating relations. This gives us the right meaning for [[face-wash]] = *λxλy ∃z. y wash z & z is y's face*. It fails, however, for *eaftos*, since now [[eaftos-penepse]] = *λxλy ∃z. y praised z & z = x*. This, of course, gives the correct interpretation if one saturates both positions to the same individual, e.g., *John*. The problem is that it doesn't force one to. One could, e.g., saturate the two positions to *John* and *Bill* getting *∃z. John praised z & z = Bill*, which is equivalent to *John praised Bill*. But this is not a possible reading for (1). It might be the case, then, that assume two rules to interpret incorporation of relations, i.e. both (14) for *eaftos* and (iii) for other relational nouns, have to be assumed.

(i) a. V-ha-nohare-' ra-kuhs-ake.
FUT-M.SG.SUBJ-wash-PUNC M.SG.SUBJ-face-LOC
(he) wash (his) face
'He will wash his (own or someone else's) face.'

b. V-ho-kuhs-ohare-'.
FUT-M.SG.SUBJ/M.SG.OBJ-face-wash-PUNC
(he) face$_i$-wash (his own) e$_i$
'He will wash his (someone else's) face. (lit. He will face-wash him.)'

(ii) Property Incorporation
If γ incorporates into β forming a node α, and $[\![\gamma]\!]$ is in D_{et} and $[\![\beta]\!]$ in $D_{e,et}$, then
$[\![\alpha]\!] = \lambda x \exists y.\ [\![\beta]\!](x)(y) \,\&\, [\![\gamma]\!](y)$.

(iii) Relation Incorporation
If γ incorporates into β forming a node α, and $[\![\beta]\!]$ and $[\![\gamma]\!]$ are both in $D_{e,et}$,
then $[\![\alpha]\!] = \lambda x \lambda y \exists z.\ [\![\beta]\!](x)(z) \,\&\, [\![\gamma]\!](z)(y)$.

are both in D_{et}, then $[\![\alpha]\!]^g = \lambda x.\ [\![\beta]\!]^g(x)\ \&\ [\![\gamma]\!]^g(x)$.

(16) *Relation Modification*
If β incorporates into γ forming a complex predicate α, and $[\![\beta]\!]^g$ and $[\![\gamma]\!]^g$ are both in $D_{e,et}$, then $[\![\alpha]\!]^g = \lambda x\lambda y.\ [\![\beta]\!]^g(x)(y)\ \&\ [\![\gamma]\!]^g(x)(y)$.

After incorporation of *eaftos* to *penepse*, the result is a complex predicate with the semantics in (17).

(17) $[\![\text{ eaftos-penepse }]\!]^g = \lambda x\lambda y.\text{praised}(x)(y)\ \&\ y = x$

Following the syntax of incorporation in Anagnostopoulou and Everaert, I assume that the internal argument of the complex predicate is the possessive pronoun *tu*, so that the VP ends up with the meaning in (18).

(18) $[\![\text{ eaftos-penepse tis}_1\ ]\!]^g = \lambda y.\text{praised}(g(1))(y)\ \&\ y = g(1)$

After composing with the subject the sentence ends up with the meaning in (19).

(19) $[\![\text{ I Maria}_1\text{ eaftos-penepse tis}_1\ ]\!]^g = \text{praised}(g(1))(g(1))\ \&\ g(1) = g(1)$
$= \text{praised(Mary)(Mary)}\ \&\ \text{Mary} = \text{Mary}$

The meaning in (19) seems intuitively adequate to describe the intuition about the meaning of (1). Yoad Winter (p.c.) points out an obvious problem with (19), however. The identity requirement posed by *eaftos* is not enough to force a reflexive interpretation. Since *tis* is a pronoun interpreted as a free variable, nothing forces co-indexation between the two arguments of the complex predicate. Consider (20a) interpreted relative to an assignment in which [1 → Mary, 2 → Helen]. The meaning, then, is as in (20b).

(20) a. I Maria$_1$ eaftos-penepse tis$_2$

b. $[\![\text{ I Maria}_1\text{ eaftos-penepse tis}_2\ ]\!]^g = \text{praised}(g(2))(g(1))\ \&\ g(1) = g(2)$
$= \text{praised(Helen)(Mary)}\ \&\ \text{Mary} = \text{Helen}$

The problem is that the second conjunct in (20b) is not a contradiction. Rather, it is a claim of identity, just like any identity statement like the one in (21).

(21) Mary is Helen.

Examples like one, then, could be taken to mean that Mary praised Helen and Helen is Mary. Discourse anaphoric readings are, thus, not excluded.

One might think that (1) is a very opaque way to make an identity statement and

that speakers might want to avoid it. Moreover, notice that every time (20b) is true (19) is also true, and not the other way around. It has long been observed that hearers, when asked to judge an ambiguous sentence in a situation in which one reading is false and the other is true, will choose the interpretation that is true. This principle has been called the Principle of Charity (Gualmini et al (2008)) or Truth Dominance (Meyer and Sauerland (2009)). This is the formulation in Meyer and Sauerland (2009, p.2).[106]

(22) *Truth Dominance*
Whenever an ambiguous sentence S is true in a situation on its most accessible reading, we must judge sentence S to be true in that situation.

Crucially, Truth Dominance, can "hide" ambiguities in cases where the two readings are in certain entailment relations to each other. To illustrate, consider the example in (23), an example that has already been discussed in this regard by Reinhart (1976) and Abusch (1994). Here, I follow the presentation in Meyer and Sauerland (2009).

(23) Every man loves a woman.

(23) can be taken to have two possible structural representations, one in which the indefinite takes scope over the universal quantifier (the *object wide-scope reading* in (24a)), and one in which the universal quantifier takes scope over the indefinite (the *subject wide-scope reading* in (24b)).

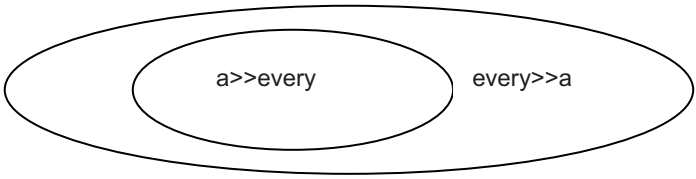
(24) a. a >> every : there exists a woman such that every man loves that woman
b. every >> a : for every man there exists a woman that loves that man

Indeed, there exist contexts in which (24a) is false but (24b) is true. Notice, however, that the two readings are not wholly independent from each other; in fact, the object wide-scope reading entails the subject wide-scope reading. If there exists a woman such that every man loves that woman, then for every man there is a woman that he loves. As shown in the diagram in (25) (after M&S), every situation in which (24a) is true is a situation in which (24b) is true, but not the other way around. So the only

[106] Gualmini et al's (2008) Principle of Charity makes no reference to the "most accessible" reading. This difference will not be relevant for the examples discussed here. See Meyer and Sauerland (2009) for discussion.

situations that could in principle distinguish between the two readings are those in which (24a) is false and (24b) is true. Does this mean, then, that one can simply pinpoint to a situation in which (24a) is false and (24b) is true to distinguish between the two readings? Given Truth Dominance. it does not. If we pick such a situation, Truth Dominance forces to say that the sentence is true, even though it is false under (24a). So, whichever situation we pick in (25), we judge the sentence as true, and the reading in (24a) cannot be detected.

(25)



The same situation arises in the case of (19) and (20b). Take the perspective of a hearer of (1) who is trying to resolve the free variable *tis*. She can either resolve it to the local subject *Mary* (i.e. assume that *Mary* and *tis* are co-indexed) or resolve to some other salient female individual, say *Helen*. As mentioned above, the hearer knows that the former choice in (19) asymmetrically entails the latter choice in (20b). Truth Dominance, then, will make sure that the hearer will always go for (19). Unfortunately, it is not enough to claim that the reading in (20b) is available, but never detected because of some pragmatic conspiracy. In examples like (26), the entailment relation between the two possible readings is reversed and yet the meaning in (20b) is not detected. (26) is never judged true in a situation in which Mary praised Mary and Mary is not Helen.

(26) I Maria den penepse ton eafto tis.
the Mary not praised the self her
“Mary did not praise herself.”

A way to avoid the problem with negation in (26) and similar examples with other operators is to make sure that the identity relation takes scope above the operator. One way to achieve this is to treat the identity relation as a presupposition. Given standard assumptions about presupposition projection (negation is considered to be a ‘hole’ for presupposition projection) the identity relation between the two arguments takes widest scope.

In what follows I will show that the basic claims made above, i.e. that *eaftos* is a relational noun and *o eaftos tu* is not a reflexivizing function, provide the basis for an

explanation of two interesting differences between Greek and English reflexives.

3.8.2 Two novel differences between Greek and English reflexives

This section presents two so far unnoticed differences between English and Greek reflexives. The first one is that, unlike in English, the Greek reflexive anaphors do not deaccent in cases where Complement Prominence determines the prosody of the cycle they find themselves into. I claim that this follows if, unlike *herself*, *o eaftos tis* does not denote a reflexivizing function. The second one is that Greek reflexive anaphors can act as antecedents to paycheck pronouns but English reflexives cannot. I claim that this follows if *o eaftos tis* contains a noun denoting the identity relation, thus providing an identity relation the paycheck pronoun can pick up, but *herself* does not.

3.8.2.1 The prosody of the Greek reflexive anaphor

It has been shown in detail in section 3.5 that English reflexive anaphors obligatorily subordinate to their sister constituent in cases where Complement Prominence applies. It is shown that Greek reflexives never subordinate. Instead, they behave like elements of type *e*. This also correctly predicts their behaviour in cases in which Focus Prominence applies.

Notice, first, in (27) that regular Greek VPs whose prosody is determined by structural considerations allow the same range of prosodic patterns, as their English counterparts in (28). The verb and its object are either on a par or the verb subordinates to the object. This is the usual result of Complement Prominence; prominence of the complement is either the result of Prosodic Matching and Nuclear Stress Generalization, as in (27B1), or the result of Prosodically Subordinating the verb to the object, as in (27B2). (27B3), where the object is Prosodically Subordinated to the verb violates Complement Prominence.

(27)			(28)		
	A:	Ti ekane o Janis?		A:	What did John do?
		what did the John		B1:	He PRAISED MARY.
	B1:	PENEPSE ti MARIA		B2:	He praised MARY.
		praised-he the Mary		B3:	He PRAISED Mary. #
	B2:	penepse ti MARIA			
	B3:	PENEPSE ti Maria #			

In the case of VPs with reflexive anaphors, the parallelism with English breaks down. Whereas English reflexive anaphors always subordinate, as in (30), Greek reflexive anaphors do not. It can be seen in (29) that they exhibit the same pattern as the VP in (27).

(29)	A:	Ti ekane o Janis?	(30)	A:	What did John do?
		what did the John		B1:	He PRAISED himSELF. #
	B1:	PENEPSE ton EAFTO tu		B2:	He praised himSELF. #
		praised-he the self his		B3:	He PRAISED HIMSELF
	B2:	penepse ton EAFTO tu			
	B3:	PENEPSE ton eafto tu #			

Given the explanation of the English facts in (30) in terms of function-argument relation between *praised* and *himself*, it follows that the relation is reversed in (29). The minimal conclusion, then, is that *o eaftos tu* does not denote a reflexivizing function that takes the predicate as its argument. Does the pattern follow from the analysis in 3.7.3.1? There, I followed Anagnostopoulou and Everaert in assuming that, after incorporation of *eaftos* into the verb, the complex predicate takes the possessive pronoun as its complement. If it is assumed that it is the status of the pronominal possessor that determines the prosodic properties of the DP that contains it, then the pattern can be made to follow.

Some more assumptions are needed to account for cases in which Focus Prominence applies. Consider the example in (31); where *eaftos* obligatorily receives a pitch accent.

(31)	A:	O Janis penepse ti Maria.
		the John praised the Mary
		'John praised Mary.'
	B1:	Ohi, o PETROS penepse ton EAFTO tu.
		No the Peter praised the self his
		'No, Peter praised himself.'
	B2:	Ohi, o PETROS penepse ton eafto tu. #

eaftos can only get a pitch accent if it is F-marked, as in the LF of the VP in (47a). Notice, however, that the Existential F-Closure of (32a) in (32b) is not Given for g(1)=Peter (in fact it is not Given under any assignment function).

(32)	a.	eaftos_F -penepse tu_1
	b.	$\exists R \exists x.\text{praised}(g(1))(x) \,\&\, R(g(1))(x)$

Once more, the problem seems to be the presence of the free variable. Notice, however, that in (32) I assumed that stress on *eaftos* is the result of F-marking *eaftos*. Things differ if one assumes that it is actually the whole DP that is F-marked, and not just its head noun. In fact, this seems to be the general case for complex DPs that contain relational nouns. Consider the VP of (33). If stress on *mother* is the result of F-marking the noun, as in (34a), then, Cyclic Domains is violated; the Existential F-Closure in (34b) is not Given.

(33) A: Oscar praised Zelda.
B: No, MAX praised his MOTHER.

(34) a. praised his_1 $[_{NP}$ mother$]_F$, where g(1)=Max
b. ∃R∃x.praised(ιz.R(g(1))(z))(x)

If, on the other hand, stress on mother is the result of F-marking the whole DP, no issue arises. The Existential F-Closure of (35a) is the one in (35b), which is Given.

(35) a. praised $[_{DP}$ his_1 mother$]_F$, where g(1)=Max
b. ∃x∃y.praised(x)(y)

The solution can be adopted for the case of Greek reflexive anaphors, as long as it is assumed that F-marking the complex DP blocks incorporation of *eaftos* into the verb. The F-marked DP denotes an individual, so the Existential F-Closure of (36a) is the one in (36b). (36a) is, thus, Given and licensed. Further F-marking of the subject at the sentence level, yields the attested prosodic pattern.

(36) a. penepse $[_{DP}$ ton eafto $tu_1]_F$
b. ∃x∃y.praised(x)(y)

The analysis also correctly predicts that, unlike English, Greek will not allow deaccented subjects in examples like (37). Recall that the prosody of the equivalent English example in section 3.5.2 was licensed because *herself* was an element of type *eet,et* that contrasts with other such function, functions that change the argument structure of the predicate they combine with. Since no such element is present in the case of *o eaftos tu* it is expected that deaccenting the subject in (37) will be infelicitous, as it is.

(37) A: O Janis penepse ton Petro.
the John praised the Peter
'John praised Mary.'

B1: Ohi, o PETROS penepse ton EAFTO tu.
No the Peter praised the self his
'No, Peter praised himself.'
B2: Ohi, (o Petros) penepse ton EAFTO tu. #

Consider the candidate syntactic structures at the VP level in (38) (where g(1)=Peter). The candidate with no F-marking in (38a) is not Given. (38b) and (38c) are both entailed by (37A), so they are both Given. Since, the Existential F-Closure in (38b) asymmetrically entails the one in (38c), (38b) is chosen.

(38)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_{VP}$ eafto-penepse $tu_1]$	∃x. praised(x)(Peter) & x=Peter	*	
b.	$[_{VP}$penepse ton $[eafto]_F$ $tu_1]$	∃R∃x.praised(x)(Peter) &R(x)(Peter)	✓	←
c.	$[_{VP}$penepse [ton eafto $tu_1]_F]$	∃x∃y. praised(x)(y)	✓	

At the sentence level, the candidate with no F-marking on the subject is not Given; (37A) does not entail that *Peter praised Peter*. The candidate with F-marking on the subject is Given, giving rise to the felicitous prosodic structure in (37B1).

(38)	Syntactic structure	Existential F-Closure	Given
a.	$[_S$ Peter $[_{VP}$ penepse ton $[eafto]_F$ $tu_1]$	∃R.praised(Peter)(Peter)&R(Peter)(Peter)	*
b.	$[_S$ $[_{DP}$ Peter$]_F$ $[_{VP}$ penepse ton $[eafto]_F$ $tu_1]$	∃R∃x.praised(Peter)(x)&R(Peter)(x)	✓

The prosody of Greek reflexive anaphors in (29) makes it clear that they are not reflexivizing functions. Treating the Greek reflexive as a full DP headed by a relational noun provides the basis for explaining the prosodic pattern in (29) and, furthemore, correctly predicts the prosodic pattern in cases in which Focus prominence applies, in (31) and (37).

3.8.2.2 An antecedent to a paycheck

There exists a class of uses of pronouns that cannot be treated under the assumption that pronouns are simply interpreted like individual variables. Consider, for example, (37), from Cooper (1979).

(37) This year the president is a Republican. Next year he will be a Democrat.

The pronoun *he* in (37a) is not referential; it does not refer to the salient individual who is the president in the first sentence in (37a). Instead, it refers to which ever individual will be the president next year. It seems, then, that it denotes a function from times to individuals that are the president in those times. (38) is an alternative to (37) with the exact same meaning.

(38) This year the president is a Republican. Next year the president will be a Democrat.

Following the intuition that pronouns like the one in (37) substitute for definite descriptions, they have been termed *pronouns of laziness*.[107]

Consider, next, the example in (39a), also from Cooper (1979). The pronoun *it* in (39a) is also not referential. There is no sense in which it can refer back to John's paycheck. Instead, it seems to denote a function from people to their paychecks.

(39) a. John gave his paycheck to his mistress. Everybody else put it in the bank.
b. John gave his paycheck to his mistress. Everybody else put his paychek in the bank.

In fact, *it* in (39a) does not seem to have a referent at all, or, better, its referent covaries relative to the quantificational subject. This is predicted if *it* contains (but not is) an individual variable bound by the subject. Indeed, the alternative in (39b) requires the presence of a pronoun for it to be equivalent to (39a). Pronouns of laziness that contain variables have been termed *paycheck pronouns*. The presence of the quantificational subject in (39a) is not a necessary condition for a paycheck-reading. The example in (40) is ambiguous between a reading in which Oscar hates Max's car (the referential reading), and a reading in which he hates his own car (the paycheck reading).

(40) Max loves his car. Oscar hates it.

Most accounts of the examples above revolve around the idea that the pronouns

[107] Arguably the most famous cases of such non-standard pronouns are so-called "donkey-pronouns", as in (i). I will use the term *descriptive pronouns* to the whole class of such pronouns.

(i) Every farmer who owns a donkey beats it.

are actually interpreted as definite descriptions. A syntactic variant of such "D-type analyses" (Cooper 1979, Heim 1990, among others), as in Heim and Kratzer (1998), would have the pronouns in (37) and (39a) expand at LF to definite description that include variables over n-ary relations. In the case of the paycheck pronoun in (37a), *it* expands to (41).

(41) the R_1 x_2

In (41), *R* is a variable over relations of type *e,et*, and *x* is a variable over individuals. The variables are indexed so that they receive a value through some salient assignment function. In the case of (37b), the value of R will be the 'paycheck-of' function. The individual variable will be bound by the quantificational subject, as in (42), that derives the intuitively correct paycheck reading of (37a).

(42) Everybody else [$_{VP^*}$ β_2 [$_{VP}$ put the R_1 x_2 in the bank]]

What is important for our purposes here, is that not all salient contextual relations can be used to fill the value of the relational variable of paycheck pronouns. Consider the contrast between (43a) and (43b) (after Heim 1990).[108]

(43) a. Every man who came with his wife sat next to her.
b. * Every married man sat next to her.

Whereas (43a) allows a paycheck-reading, according to which every man sat next to his own wife, (43b) does not have such a reading. This is surprising since *married* undoubtedly makes the 'married-to' relation salient, and the relational variable should be able to pick it up. Following Kadmon (1987), Heim (1990) calls this issue the *formal link problem*. Indeed, the restriction on what can count as an antecedent for the relational variable seems to be syntactic; paycheck pronouns require overt linguistic antecedents.[109]

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[108] Heim uses (i) instead of (43a). This is so, because she makes the point for donkey-pronouns.
(i) Every man who has a wife sat next to her.

[109] Elbourne (2005) argues that the Formal Link Problem is evidence for an NP-deletion analysis of descriptive pronouns. Elbourne (rougly) treats descriptive pronouns as determiners with deleted NP-complements. *her* in (43a), then, would be treated as *her* ~~*wife*~~. As shown in (ii) (Elbourne 2005, 44), NP-ellipsis is subject to the same restriction. (43b) and (ii), then, are instances of the same phenomenon.
(ii) Mary is married. * And Sue's ~~NP~~ is the man drinking the Martini.
Notice that 'overt nominal antecedent' is an insufficient way to describe the relevant restriction.

Like English, Greek exhibits paycheck-readings for (clitic) pronouns. (44) is fine under the paycheck reading of the clitic pronoun *tin*.

(44) O Janis edhose tin epitaji tu stin eromeni tu.
the John gave the.fem paycheck his to-the mistress his.
Kathe alos tin edhose sti jineka tu.
everyone else her gave to-the wife his.
'John gave his paycheck to his mistress. Everyone else gave it to his wife.'

The contrast between (45a) and (45b) is a manifestation of the formal link problem in Greek.

(45) a. Kathe andras pu irthe me ti jineka tu ekatse dhipla tis.
every man who came with the wife his sat next-to her
'Every man who came with his wife sat next to her.'

b. * Kathe pandremenos andras ekatse dhipla tis.
every married man sat next-to her
'Every married man sat next to her.'

In fact, Greek provides further evidence for a formal link between the paycheck pronoun and its antecedent. The paychek pronoun *her* in the English example (43a) bears a feminine gender feature. Since English has a natural gender system, this is so because the scope of the 'wife-of' relation is a set of female individuals. This seems to be the same in the Greek example in (45a). But the paycheck pronoun *tis* in (44) also bears a feminine feature. This is not so because of any semantic consideration, but because Greek is a language with a grammatical gender system. Most nouns in Greek are specified for grammatical gender (feminine, masculine, or neuter). The most reliable indicator of the gender specification of a Greek noun is the morphological make-up of the determiner it is a complement of. Pronouns coreferential with DPs agree with them in grammatical gender, as in the case of the referential pronoun in (46). The paycheck pronoun in (44), then, is no different; it requires agreement with an antecedent in formal features.

As Elbourne shows, NP-deletion can be licensed by the immediate environment. The same is true for (at least paycheck) descriptive pronouns, as shown by Jacobson's (2000, 89) example in (iii).

(iii) (A new faculty member picks up her first paycheck from her mailbox. Waving it in the air, she says to a colleague:) Do most faculty members deposit it in the Credit Union?

(46) Pira tin epitaji ke tin edhosa sto Jani.
I-got the.fem paycheck and I-gave her to-the John
'I got the paycheck and gave it to John.'

The argument can be strengthened if one considers the case of agreement mismatches. Semantic considerations are not totally absent in the determination of gender agreement in Greek. Referential (and bound) pronouns anteceded by human-denoting DPs can optionally show agreement in semantic rather than grammatical gender. As shown in (47), a pronoun coreferential with the DP *to koritsi* 'the.neu girl/ girlfried' can either bear a neuter (*tu*) or feminine (*tis*) gender feature.

(47) Pira tilefono to koritsi ke tu/ tis zitisa na vjume.
I-took telephone the.neu girl and it/ her I-asked subj we-go-out
'I called the girl and asked her out.'

Consider now the example with a paycheck pronoun in (48). (48a), in which the pronoun bears a neuter gender feature, is ambiguous in the usual way; it has both a referential reading, in which John likes his girlfriend but everybody else dislikes John's girlfriend, and a paycheck reading, in which John likes his girlfriend, but everybody else dislikes his own girlfriend. (48b), on the other hand, in which the pronoun bears a feminine gender feature, only allows the referential reading, not the paycheck one. Paycheck pronouns, then, seem to be particularly sensitive to the formal properties of their antecedents.

(48) a. O Janis ajapai to koritsi tu.
the John loves the.neu girl his
Kathe alos to antipathi.
everyone else it dislikes
'John loves his girlfried. Everybody else dislikes her.'

b. O Janis ajapai to koritsi tu.
the John loves the.neu girl his
Kathe alos tin antipathi.
everyone else her dislikes
'John loves his girlfried. Everybody else dislikes her.'

With so much in place, I can move to cases that involve reflexive anaphors. The main empirical observation of this section is that, whereas Greek reflexive anaphors can be antecedents to paycheck pronouns, English reflexives cannot be. Consider, first the Greek example in (49). (49) is ambiguous, it can either mean that everybody other than John neglects John (the referential reading), or that everybody other than

John neglects himself (the paycheck reading).

(49) O Janis frontizi kala ton eafto tu.
the John takes-care well the.masc self his
Kathe alos ton parameli.
everyone else him neglects
'John takes good care of himself. Everybody else neglects him.'

How does the paycheck reading come about? The only thing that needs to be assumed is that the relational variable in the paycheck pronoun picks up the identity relation. The LF of (49) in (50a), then, has the semantics in (50b) that seem adequate to capture the paycheck reading.

(50) a. Everybody else [$_{VP^*}$ β_2 [$_{VP}$ neglects the R_1 x_2]]
where g(1) = λxλy. y=x

b. ∀x: human(x) & x ≠ John → neglects(ιy.y=x)(x)

Consider next the English example in (51). Unlike its Greek equivalent in (49) it only allows the referential reading, in which everybody other than John neglects John.[110]

(51) John takes good care of himself. Everybody else neglects him.

Why should (51) be different than (49)? I claim that the contrast is a result of the formal link restriction; i.e. the restriction to linguistic antecedents. The contrast follows if *o eaftos tu* in Greek contains a noun denoting the identity function, but *himself* does not. This is exactly so if English reflexives are treated as reflexivizing functions, and Greek reflexives are treated as in the previous section.

3.9 Conclusion

This chapter argued that English reflexive anaphors should be treated as reflexivizing functions rather than variables. The argument was based on a detailed investigation

[110] The relational noun *self*, as in *I like my new self* does seem to allow paycheck readings, as in (i), as long as the pronoun bears neuter gender. Notice that replacing *him* wityh *it* does not alter the acceptability of example (51).

(i) After the course, only John embraced his new mature self. Everybody else rejected it/ *him.

of the prosodic properties of reflexive anaphors. By applying the focus theory argued for in Chapter 2, it was shown that only a lexical theory of reflexivization can account for their full prosodic pattern.

Examples like (1) showed that the alternatives to focused reflexive anaphors cannot be other individuals. Instead they have to be other functions that manipulate the argument structure of the predicate they combine with. By achieving this result the analysis has hopefully set a base-line for future research on other argument structure operations and construals.

(1) A: Oscar praised Zelda.
B1: No, ZELDA/Zelda praised herself. #
B2: No, ZELDA praised herSELF.
B3: No, Zelda praised herSELF. ?

Examples in which the prosody of VPs is determined by structural considereations, as in (2), revealed the argument-function relation that holds between a reflexive anaphor and the predicate it combines with; the reflexive anaphor must be interpreted as a function that takes another function (the predicate) as its argument. Both these requirements are met by the semantic theory of reflexive anaphors without any need for further stipulation.

The last part of the chapter discussed a language other than English. It was argued that Greek reflexive anaphors provide evidence that the semantics of reflexive anaphors cannot be treated in a uniform way across languages, and that there must be (at least) another sources of reflexivization with reflexive anaphors. It was argued for Greek that the source of reflexivization is the relational noun *eaftos* 'self' that imposes an identity requirement between the two arguments of the matrix predicate. The analysis opens a new pesprctive in the comparative study of reflexive anaphors, by identifying two novel areas of variation (prosody and licensing of paycheck readings). It remains to be seen whether reflexive anaphors that have been treated like the Greek one, show the same behavior in these two respects.

Chapter 4

FOCUS ON PRONOMINAL ANAPHORS

This chapter investigates the prosody of utterances containing bound and referential pronouns. The stress pattern of examples in which prosody is determined by F-marking reveals that contrasting bound pronouns should be locally indistinguishable in terms of indices; focus on a bound pronoun is not licensed due to differences in names of individual variables, but due to differences in descriptive content. The stress pattern of descriptive pronouns is also explained by differences in descriptive content as long as they are given a treatment in terms of Skolem rather than pure descriptions. The stress pattern of examples in which prosody is determined by purely structural factors argues that pronouns should be treated as functions that take other functions as arguments.

4.1 Introduction

The previous chapter identified two properties that the semantics of reflexive anaphors should meet. By investigating cases in which the prosody of VPs containing reflexives was subject to Focus Prominence, it was argued that reflexive anaphors change the argument structure of the predicate they combine with. By investigating cases in which the prosody of VPs containing reflexives was subject to Complement Prominence, it was argued that reflexive anaphors are functions that take other functions as complements. This chapter uses parallel cases with bound and referential pronouns in order to specify the requirements that data from prosody impose on the semantics of pronominal anaphors.

I will use the same basic division of the prosodic facts as in the previous chapter. Section 4.2. focuses on the question of when a pronominal anaphor must be F-marked. If it is, Focus Prominence applies and the pronoun receives a pitch accent. The main observation regarding such cases is that a bound pronoun can optionally bear focus in cases like (1).

(1) A: Every actor said that Zelda praised him.
B1: No, every DIRECTOR said that Zelda praised him.
B2: No, every DIRECTOR said that Zelda praised HIM.

This behavior has been noted already by Sauerland (1998).[111] There and in subsequent work the main issue has been to explain how two bound pronouns, the one in the target- and the one in the antecedent-sentence, can *differ* in meaning, so that focus on *him* is licensed. In the prosodic model adopted here in which prosody is determined locally, (i.e. in a domain in which the pronouns are not bound) the main issue around examples like (1) is how the two bound pronouns can be sufficiently *alike* so that F-marking is not obligatory.

The second set of data regards the prosody of constituent that contain no F-marking. The prosody of such constituents is determined by Complement Prominence. It has already been observed in section 2.4.3.3.1 that pronominal anaphors always deaccent in such cases, as in (2).

(2) A: What did Helen's father do?
B1: He PRAISED her.
B2: He praised/ PRAISED HER. #

The chapter is organized as follows. Section 4.2 discusses cases in which Focus Prominence applies. Section 4.3. discusses cases in which Complement Prominence applies. Section 4.4 concludes.

4.2 Focus Prominence

Since all the examples discussed in this section are examples in which the subject is F-marked, it follows from the focus theory in chapter 2, that pitch accent on the direct object of these examples is only possible if the object bears an F-marker. The same is true for pronominal anaphors. In all the examples in this section in which the pronominal anaphor bears a pitch accent, it must be F-marked. The aim of this section is to discuss the conditions under which a pronominal anaphor can be F-marked.

Section 4.2.1 frames the problem in the recursive theory of prosody adopted

[111] Sauerland's (1998) original example is given in (i).

(i) Every boy called his father, and every TEACHER called HIS father.

here. Section 4.2.2 discusses the relevant data under a theory that treats pronominal anaphors like indexed variables. Section 4.2.3 discusses the prosody of descriptive pronouns and argues that bound pronouns too should be treated like descriptive pronouns. Section 4.2.4 discusses the data in a variable-free system.

4.2.1 Framing the issue

This section frames the issue based on examples like (1). Sauerland (1998) first noted that bound variables are optionally stressed in (1).

(1) A: Every actor said that Zelda praised him.
B1: No, every DIRECTOR said that Zelda praised him.
B2: No, every DIRECTOR said that Zelda praised HIM.

The same is true in the case of referential antecedents, when they are in a position to a-bind the pronoun.

(2) A: Oscar said that Zelda praised him.
B1: No, MAX said that Zelda praised him.
B2: No, MAX said that Zelda praised HIM.

The focus theory of Chapter 2 poses two requirements in the way one can go about explaining the optionality in (1) and (2). The first one is that the decision to F-mark the pronoun has to be made at the first cyclic node, the VP *praised him*, i.e. at a level at which the pronoun is not bound. To allow (2B1), the pronoun should be treated in a way that the VP *praised him* is Given. Roughly speaking, this means that the pronoun in that VP should be sufficiently similar to the pronoun in the antecedent, so that the antecedent (or some part of it) entails the VP.

The licensing of (2B2) is tied to the second requirement, which is that focus in the pronoun should be allowed by Maximize Focus Presuppositions. To appreciate the issue raised by the second requirement, consider (1) under the syntactic structure in (3) (I do not indicate F-marking at this point). For ease of reference, I will refer to the target VP as VP_T, and to the antecedent VP as VP_A.

(3) A: $[_S\ [_{DP}$ every $[_{NP}$ actor$]]\ [_{VP^*}\ \beta 1$ said that Zelda $[_{VP}$ praised $him_1]\ ]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ director$]]\ [_{VP^*}\ \beta 1$ said that Zelda $[_{VP}$ praised $him_1]\ ]]$

Since the variant with no F-marking is felicitous, the Existential F-Closure of VP_T, $\exists x.praised(g(1))(x)$, must be Given. This is achieved in (3) by allowing pronouns

bound by different operators to have the same index. If so, VP_T is Given since its Existential F-Closure is entailed by the Existential Closure of VP_A, *∃x.praised(g(1))(x)*. Notice, now, that a treatment of pronouns as variables of type *e*, as in section 3.2.1.1, predicts that the Existential F-Closure of the variant of VP_T with F-marking on *him* will be *∃x∃y.praised(x)(y)*. Since *∃x∃y.praised(x)(y)* is asymmetrically entailed by *∃x.praised(g(1))(x)*, the F-marked variant should be blocked by Maximize Focus Presupposition. Yet, it is not.

In all the examples examined so far focus was licensed only when the non-focused variant was not Given. I can see two ways to escape this result in (2). The first one is to assume that the relevant constituent is structurally ambiguous in such a way that one structure forces F-marking and the other does not need it. The second way is to assume such a semantics for the pronoun that the two Existential F-Closures (the one with and the one without F-marking) cannot be distinguished by Maximize Focus Presupposition; i.e. they enter no entailment relation, or they symmetrically entail each other. The approach discusssed in section 4.2.2 uses the former option, the one discussed in 4.2.4 the latter.

4.2.2 Indices

Sauerland (1998) argues that licensing of focus in (1) is the result of contra-idexing the two bound pronouns in the target and the antecedent VP. I present an account of (1) that makes crucial use of indices. I assume the focus theory in Chapter 2 and the indexing system in 3.2.1.1.

Consider the syntactic structure of (1) in (4). (4) predicts F-marking and pitch accent on the pronoun at the VP level, since *∃x.praised(g(1))(x)* does not entail *∃x.praised(g(2))(x)*.

(4) A: $[_S\ [_{DP}$ every $[_{NP}$ actor$]]\ [_{VP^*}\ \beta_1$ said that Zelda $[_{VP}$ praised $[\text{him}_1]]]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ director$]_F]\ [_{VP^*}\ \beta_2$ said that Zelda $[_{VP}$ praised $[\text{him}_2]_F]]]$

At the sentence level, further F-marking is required, since (5a) is not Given. *Every actor said that Zelda praised him* entails *∃P∃y ∀x:P(x)→said(praised(y)(Zelda))(x)* for y=one of the actors in the antecedent and P=some property that uniquely applies to that actor (e.g. having a specific social security number), so the syntractic structure in (5b) is Given.[112] So is the one in (5c).[113] Maximize Focus Presupposition does not

[112] Jakub Dotlacil (p.c.) pointed out to me that the entailment holds.

distinguish between the two; The Existential F-Closure in (5b) entails the one in (5c). But it is also the case that the Existential F-Closure in (5c) entails the one in (5b), for P some property that defines a singleton set of individuals. Both (5b) and (5c) should, in principle, be possible then.

(5)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_S\ [_{DP}$ every $[_{NP}$ director$]]\ [_{VP^*}$ β_2 said that Zelda $[_{VP}$praised $[him_2]_F]]]$	$\exists y \forall x$:director(x)→ said(praised(y)(Zelda))(x)	*	
b.	$[_S\ [_{DP}$ every $[_{NP}$ director$]_F]\ [_{VP^*}$ β_2 said that Zelda $[_{VP}$praised $[him_2]_F]]]$	$\exists P \exists y \forall x$:P(x)→ said(praised(y)(Zelda))(x)	✓	←
c.	$[_S\ [_{DP}$ every $[_{NP}$ director$]]_F\ [_{VP^*}$ β_2 said that Zelda $[_{VP}$praised $[him_2]_F]]]$	$\exists x \exists y$. said(praised(x)(Zelda))(y)	✓	←

Optional focus is explained by positing an additional syntactic structure for (1). (6) is like (4) except that the bound pronouns and the binding operators they are bound by bear the same index.[114] (6) predicts no F-marking and no pitch accent on the pronoun, since *∃x.praised(g(1))(x)* entails *∃x.praised(g(1))(x)*.

(6) A: $[_S\ [_{DP}$ every $[_{NP}$ actor$]]\ [_{VP^*}\ \beta_1$ said that Zelda $[_{VP}$ praised $him_1]]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ director$]_F]\ [_{VP^*}\ \beta_2$ said that Zelda $[_{VP}$ praised $him_1]]]$

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[106] The NP director might be F-marked in this case too, as in $[_S[_{DP}$ every $[_{NP}$ director$]_F]_F\ [_{VP^*}\ \beta_2$ said that Zelda $[_{VP}$ praised $[him_2]_F]]]$, if the DP every director is a cyclic domain.

[114] The account is different than the one in Sauerland (1998) in that Sauerland does not need to allow variables bound by different operators to bear the same index. In fact, the possibility is explicitly rejected. Sauerland assumes a focus theory according to which the focus structure of a constituent XP is licensed as long there is some constituent dominating XP for which the relevant licensing conditions are met. Consider (i). The VP_T *$[_{VP}$ praised him$_2$]* is not Given since *∃x.praised(g(2))(x)* does not entail *∃x.praised(g(1))(x)*. The variant with no F-marking is licensed, however, because it is contained in a constituent, the VP* *$[_{VP^*}\ \beta_2$ said that Zelda $[_{VP}$ praised him$_2$]*, which is Given, since at that point the variable is bound. This move is not available in the recursive theory of prosody assumed here.

(i) A: $[_S\ [_{DP}$ every $[_{NP}$ actor$]]\ [_{VP^*}\ \beta_1$ said that Zelda $[_{VP}$ praised $him_1]\ ]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ director$]]\ [_{VP^*}\ \beta_2$ said that Zelda $[_{VP}$ praised $him_2]\ ]]$

To derive (6), Heim's (1997) No Meaningless Coindexing in (7) must be rejected. Heim introduces (7) as part of a theory of Antecedent Contained Deletion (ACD). Sauerland (1998, 2008) and Kennedy (2004) propose theories of ACD that do not rely on (7).

(7) *No Meaningless Coindexing*
If an LF contains an occurrence of a variable *v* that is bound by a node *a*, then all occurrences of *v* in this LF must be bound by the same node *a*.

To correctly predict optionality of focus in (1), it is crucial to assume that the two possible structures for (1B) are not compared to each other. If they were, as in (8), focus would never be licensed.

(8)	Syntactic structure	Existential F-Closure	Given	MFP
a.	$[_{VP}$ praised him$_1]$	∃x. praised(g(1))(x)	✓	←
b.	$[_{VP}$ praised him$_2]$	∃x. praised(g(2))(x)	*	
c.	$[_{VP}$ praised $[\text{him}_{1/2}]_F]$	∃x∃y. praised(x)(y)	✓	

Focus on a bound variable is not always optional. Focus is obligatory when the bound pronoun in the antecedent is replaced with a proper name. Consider (9) under the bound variable reading of (9B).

(9) A: Every actor said that Zelda praised Oscar.
B1: No, every DIRECTOR said that Zelda praised him. #
B2: No, every DIRECTOR said that Zelda praised HIM.

The syntactic structure in (10) correctly predicts that the bound pronoun must be F-marked.

(10) A: $[_S [_{DP}$ every $[_{NP}$ actor$]]$ $[_{VP}$ said that Zelda $[_{VP}$ praised Oscar$_1]]]$
B: $[_S [_{DP}$ every $[_{NP}$ director$]]$ $[_{VP^*}$ β_1 said that Zelda $[_{VP}$ praised $[\text{him}_2]_F]]]$

The system, however, also allows the indexing in (11). Since *∃x.praised(g(1))(x)* entails *∃x.praised(g(1))(x)* the target VP is Given and no F-marking is needed. But F-marking is obligatory.

(11) A: $[_S [_{DP}$ every $[_{NP}$ actor$]]$ $[_{VP}$ said that Zelda $[_{VP}$ praised Oscar$_1]]]$
B: $[_S [_{DP}$ every $[_{NP}$ director$]]$ $[_{VP^*}$ β_1 said that Zelda $[_{VP}$ praised him$_1]]]$

Adopting Heim and Kratzer's (1998, 254) prohibition in (12), rules the structure in (11) out.[115]

(12) No LF representation (for a sentence or a multisentential text) must contain both bound occurrences and free occurrences of the same index.

There are, however, independent reasons to exclude (9B1). Recall that, like any other assertion, the utterance in (9B) is an answer to the Current Question. Since the Current Question is not explicit, it is accommodated. I proposed in section 3.7.2 that accommodation of the Current Question is subject to the constraint in (13).

(13) *Constraint on the accommodation of the Current Question*
The antecedent for Givenness licensing should be a member of the Hamblin-set of the Current Question.

The mini-discourse in (9) violates the constraint if (9B1) is chosen. In the case of (9B1) the accommodated question is Who said that Zelda praised him (or For what property is it the case that every person that has that property is such that he said that Zelda praised him). (9A) is not a member of the Hamblin-set of that question. No problem arises in the case of (9B2). The accommodated question in that case is Who said that Zelda praised who and (9A) is a member of the Hamblin-set of that question. The pattern in (9), then, is predicted without the need to stipulate (12).

I have taken for granted in the discussion above that a speaker unambiguously accommodates *Who said that Zelda praised him* on the basis of (9B1) and *Who said that Zelda praised who* on the basis of (9B2). As shown in (14) there is no optionality when the antecedent is a multiple wh-question.

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[115] Heim and Kratzer (1998, 254) adopt (12) in order to deal with a very similar overgeneration problem that arises with ellipsis examples like the one in (i). Consider (i) in a reading in which Philipp went to Roman's office. The elided VP, then, can only mean that Marcel went to Roman's office too. Readings in which Marcel went to his own or Philipp's office are excluded.

(i) On Roman's birthday, Philipp went to his office. Marcel didn't.

But the LF in (ii) (where g(1)=Roman) obeys Heim and Kratzer's LF Identity Condition on ellipsis, but derives a different reading, one which Marcel went to his own room.

(ii) $[_S\ [_{DP}$ Philipp$]\ [_{VP}$ went to his$_1$ office$]]]$
$[_S\ [_{DP}$ Marcel$]\ [_{VP^*}\ \beta 1\ [_{VP}$ went to his$_1$ office$]]]$

(12) rules (ii) out. Notice, however, that (ii) is also ruled out by (some versions of) a Focus Condition on ellipsis.

(14) A: Who said that Zelda praised who?
B1: Every DIRECTOR said that Zelda praised him. #
B2: Every DIRECTOR said that Zelda praised HIM.

The pattern in (14) follows from the approach. Consider the syntactic structure of (14B1) in (15). The Existential F-Closure of the target VP is $\exists x.praised(g(1))(x)$, which is not entailed by the Existential Closure of (14A), $\exists x \exists y.y$ *said that Zelda praised* x. F-marking is, thus, necessary.

(15) $[_S\ [_{DP}$ every $[_{NP}$ director$]]_F\ [_{VP^*}\ \beta_1$ said that Zelda $[_{VP}$ praised him$_1]]]$

The judgment in the case of (16) is less clear. Focus on the bound pronoun is not entirely natural, but is not altogether out.

(16) A: Who said that Zelda praised him?
B1: Every DIRECTOR said that Zelda praised him.
B2: Every DIRECTOR said that Zelda praised HIM. ?

If focus in (16) is truly optional, optionality is explained as in the case of example (1). The fact remains, however, that utterances like, e.g., (1B1), have strengthened meanings of the form in (17a), and not of the form in (17b).[116] If focus is optional in (16) it is not clear why speakers cannot accommodate (16A) on the basis of (1B1).

(17) a. Every director said that Zelda praised him, and no one else said that Zelda praised him.
b. Every director said that Zelda praised him, and no one else said that Zelda praised anybody else.

Recall, however, that section 2.6.2.3 discussed cases in which a specific syntactic representation was chosen in order to unambiguously accommodate some antecedent. An account along the same lines can also be used to explain the exhaustification implicature of utterances like (1B1). Since, the stress pattern in (1B2) unambiguously corresponds to the question in (14A), (1B2) is always used when the

[116] This is confirmed by the example in (i). The utterance in (iB) only rejects the claim that every actor said that Zelda praised him, and not the claim that every producer said that Zelda praised Max. See sections 2.5.3 and 3.7 for discussion of similar cases.

(i) A: Every actor said that Zelda praised him and every producer said that Zelda praised Max.
B: No, every DIRECTOR said that Zelda praised him.

Current Question to be accommodated is the one in (14A). (1B1), accordingly, is restricted to accommodating the question in (16A).

To conclude this section, let me discuss the case of referential pronouns. Focus is also obligatory in (18), in a reading in which Zelda praised Max.[117] In the case of a bound construal for (18B), (18) does not differ from (9). Focus is also predicted to be obligatory if *him* is a referential pronoun. Consider the syntactic structure in (19). F-marking *him* will be obligatory since $\exists x.praised(g(3))(x)$ does not entail $\exists x.praised(g(2))(x)$.

(18) A: John said that Zelda praised Oscar.
B1: No, MAX said that Zelda praised him. #
B2: No, MAX said that Zelda praised HIM.

(19) A: $[_S\ John_1\ [_{VP}$ said that Zelda $[_{VP}$ praised $Oscar_2]]]$
B: $[_S\ [Max_3]_F\ [_{VP}$ said that Zelda $[_{VP}$ praised $[him_3]_F]]]$

As expected focus is excluded when the pronoun corefers with the proper name in the antecedent. Consider (20) in a reading in which Max said that Zelda praised Oscar. The structure in (21) predicts that no focus will be required since $\exists x.praised(g(2))(x)$ entails $\exists x.praised(g(2))(x)$.

(20) A: John said that Zelda praised Oscar.
B1: No, MAX said that Zelda praised him.
B2: No, MAX said that Zelda praised HIM. #

(21) A: $[_S\ John_1\ [_{VP}$ said that Zelda $[_{VP}$ praised $Oscar_2]]]$
B: $[_S\ [Max_3]_F\ [_{VP}$ said that Zelda $[_{VP}$ praised $him_2]]]$

Sauerland (1998) mentions the possibility that the stress pattern of referential pronouns in (18)/ (20) can also be captured without the use of indices and assignment functions. He mentions that referential pronouns could be treated as 'hidden proper names' (Sauerland 1998). In the literature on Binding Theory, Reinhart (1983) opened the way for interpreting referential pronouns and other referential expressions as indexical expressions whose value is fixed directly by the

[117] To the best of my knowledge, Rooth (1992b) and Fiengo and May (1994, 110) are the first to notice the pattern in (18)/ (20). Fiengo and May point out that (ia) is ambiguous between a 'sloppy' reading, in which Oscar saw his own mother, and 'strict' reading, in which Oscar went to Max's mother. (ib), on the other hand, only allows the sloppy reading. See also Sauerland (1998, 2001, 2004).

(i) a. Max saw his mother. OSCAR saw his mother too.
b. Max saw his mother. OSCAR saw HIS mother too.

context. This was done by arguing that Binding Principles only regulate the distribution of binding construals (o-binding, in section 3.2.2). Referential construals that lead to not attested interpretations are ruled out by Rule I (see section 3.2.2 and the references there for discussion). If so, there is no binding theoretic reason to assume that referential pronouns and other referential expressions bear indices. To implement this idea constituents should not only be interpreted relative to an assignment function but also relative to a context. This should come as no surprise since assignment functions are just part of the context already. (22), from Büring (2005), gives a semantics for pronouns that is not dependent on assignment functions.

(22) $[\![\text{him}]\!]^{g,c}$ = the most salient individual in c, if there is one, undefined otherwise

A sentence like (23B), then, denotes the proposition that *Zelda praised Oscar*, without the additional step of indices and assignment functions.

(23) A: Did you hear anything about Oscar?
B: Yes. Zelda praised him.

It is easy to assume in the mini-discourse in (23) that Oscar is the most salient individual in the context. This, of course, is not always the case and a precise theory should be developed for reference assignment to pronouns by contexts. This is far beyond the scope of this dissertation and I can only refer to the huge pragmatic literature that deals with exactly this issue, as in, e.g., Centering Theory.

As long as it is assumed that Existential F-Closures are interpreted relative to contexts in the same way regular meanings are, the stress pattern of referential pronouns in (18)/ (20) is straightforwardly derived. The denotation of the target VP relative to the context in, e.g., (20) will be $\lambda x.praised(Oscar)(x)$, and its Existential F-Closure $\exists x.praised(Oscar)(x)$. The denotation and Existential F-Closure do not differ from the ones reached using indices, so the same reasoning used above predicts that *him* will not be F-marked. Similarly for (18), it is correctly predicted that F-marking will be obligatory.

4.2.3 Descriptive content

4.2.3.1 Donkeys and paychecks

Sauerland (2001) and Jacobson (2000) point out that the stress pattern of bound pronouns differs from that of descriptive pronouns. Focus is obligatory in cases like (24) and (25).

(24) A: Every farmer who owns a donkey, beats it.
B1: No, every farmer who owns a HORSE, beats it. #
B2: No, every farmer who owns a HORSE, beats IT.

(25) A: Every farmer who hates his donkey, beats it.
B1: No, every farmer who hates his HORSE, beats it. #
B2: No, every farmer who hates his HORSE, beats IT.

In section 3.8.2.2 I adopted an account of descriptive pronouns according to which they are hidden definite descriptions headed by relational variables, as in (26). *R* is a variable over relations of type *e,et* and *x* a variable over individuals. Let us follow Büring (2004) in calling descriptions like (26), *Skolem descriptions*.

(26) the R_n x_n

The syntactic structure of, e.g., (24), then, is given in (27). R_2 is assigned by the context the value *λxλy.y is the donkey x owns*, and R_3 the value *λxλy.y is the horse x owns*.

(27) A: $[_S\ [_{DP}$ every $[_{NP}$ farmer] who owns a donkey] $[_{VP^*}\ \beta_1\ [_{VP}$ beats the $R_2\ x_1\ ]]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ farmer] who owns [a horse]$_F$] $[_{VP^*}\ \beta_1\ [_{VP}$ beats the $R_3\ x_1\ ]]]$

The structure in (27) explains the obligatoriness of focus. Consider the fist VP level. The Existential F-Closure of the target VP is *∃x.beats(the horse g(1) owns)(x)*, which is not entailed by (27A). Focus on the descriptive pronoun is, then, necessary.[118]

Sauerland (2001) and Jacobson (2000) point out that paycheck pronouns cannot be focused in examples like (28) and (29).

[118] I assumed that the indices on the individual variables are the same. That gives (24/25B1) its best chance to be licensed.

(28) A: Every farmer who owns a donkey, beats it.
B1: No, every PRIEST who owns a horse, beats it.
B2: No, every PRIEST who owns a horse, beats IT. #

(29) A: Every farmer who hates his donkey, beats it.
B1: No, every PRIEST who hates his donkey, beats it.
B2: No, every PRIEST who hates his donkey, beats IT. #

As Jacobson points out, the pattern is unexpected under the approach based on indices. The relational variables in the target and the antecedent VP are identical since they both pick out the relation *λxλy.y is the donkey x owns*. The indices on the individual variables, however, can differ, as in (30). If so, focus should be licensed, since the Existential F-Closure of the antecedent VP, *∃x.beats(the donkey g(1) owns)(x)*, does not entail the Existential F-Closure of the target VP, *∃x.beats(the donkey g(3) owns)(x)*.

(30) A: $[_S\ [_{DP}$ every $[_{NP}$ farmer] who owns a donkey] $[_{VP^*}\ \beta_1\ [_{VP}$ beats the $R_2\ x_1\ ]]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ priest$]_F$ who owns a donkey] $[_{VP^*}\ \beta_3\ [_{VP}$ beats the $R_2\ x_3\ ]]]$

A way out of this problem is to assume that descriptive pronouns are not Skolem descriptions, but *pure descriptions*, to use again Büring's (2004) terminology, as in (31). In (31a), the argument of the definite determiner is a variable over properties, whose value is fixed by the context. In the case of, e.g., (28A) the value of P is *donkey*. (31b) is a variant of (31a) according to which a descriptive pronoun spells-out a determined followed by a NP, elided under identity with an antecedent. I refer to Elbourne (2001, 2005) for a full exploration of this idea.

(31) a. the P_n
b. it ~~donkey~~

Since the representations in (31) contain no individual variable, covariation is accounted for with the use of situations (Berman 1987, Heim 1990, Büring 2004, Elbourne 2001, 2005). Situations are parts of worlds, that contain fewer things than the world they are part of. The basic idea is that generalized quantifiers quantify over pairs of situations and individuals. A sentence containing a donkey pronoun like (28A) will have the informal semantics in (32).

(32) *Informal semantics for (28A)*
For every individual *x* and situation *s* such that *x* is a farmer who owns a donkey in *s*, there is an extended situation *s'* of *s*, in which *x* beats the unique donkey in *s'*.

The syntactic structure of (28) under a pure descriptions account of donkey pronouns is given in (33).[119]

(33) A: $[_S\ [_{DP}$ every $[_{NP}$ farmer] who owns a donkey] $[_{VP}$ beats the $P_1\ ]]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ priest$]_F$ who owns a donkey] $[_{VP}$ beats the $P_1\ ]]]$

Since there are no individual variables in (33), the stress pattern in (28) is straightforwardly derived. The Existential F-Closure of the antecedent VP, *∃x.beats(the donkey)(x)*, entails the Existential F-Closure of the target VP, *∃x.beats(the donkey)(x)*, with no need for F-marking.

Note, however, that stress on a donkey pronoun is possible in examples like (34). A pure descriptions account cannot explain why stress is licensed.

(34) A: Every farmer who owns a donkey, beats it.
B1: No, every farmer who RENTS a donkey, beats it.
B2: No, every farmer who RENTS a donkey, beats IT. ?

A skolem descriptions account predicts focus on the donkey pronoun. Skolem descriptions are rich enough that the descriptions in (34A) and (34B) differ. The relational variables in (35) pick out different relations; R_2 picks out *λxλy.y is the donkey x owns* and R_3 picks out *λxλy.y is the donkey x rents*. If so, focus is required since *∃x.beats(the donkey g(1) owns)(x)* does not entail *∃x.beats(the donkey g(1) rents)(x)*. A skolem description analysis of (34), then, predicts (34B2).

(35) A: $[_S\ [_{DP}$ every farmer who owns a donkey] $[_{VP^*}\ \beta_1\ [_{VP}$ beats the $R_2\ x_1\ ]]]$
B: $[_S\ [_{DP}$ every farmer who [rents]$_F$ a donkey] $[_{VP^*}\ \beta_1\ [_{VP}$ beats [the $R_3\ x_1\ ]_F]]]$

A pure description analysis of (34), as in (36), predicts the pattern without focus in (34B1). Descriptive pronouns, then, should be ambiguous between a pure description and a Skolem description analysis.

(36) A: $[_S\ [_{DP}$ every farmer who owns a donkey] $[_{VP^*}\ \beta_1\ [_{VP}$ beats the $P_1\ ]]]$
B: $[_S\ [_{DP}$ every farmer who [rents]$_F$ a donkey] $[_{VP^*}\ \beta_1\ [_{VP}$ beats the $P_1\ ]]]$

Allowing a Skolem description analysis of donkey pronouns, however, brings us back to the problem with (28)/(29); if Skolem descriptions are allowed, then (30)

[119] I have not indicated situations in (33). To account for the stress pattern of (33) under the pure descriptions account one should assume that Givenness is not sensitive to the names of situation variables.

should be a possible syntactic structure for (28) and focus should be licensed. To summarize, the licensing of focus in (34) requires Skolem descriptions, but, by allowing Skolem descriptions, the system overgenerates in examples like (28)/(29), since focus can now be licensed by the different names of the individual variables. The problem can be solved by adopting the stipulation in (37). (37) forces all bound pronouns to bear the same index.[120]

(37) In an LF representation (for a sentence or a multisentential text) if pro_n and $pro_{n'}$ are pronouns o-bound by distinct binding operators, then n=n'.

The stipulation in (37) rules out the syntactic structure in (30) since the bound pronouns in the target and the antecedent VPs bear distinct indices. The syntactic structure in (38) is the only possible structure; (38) correctly disallows focus.[121]

(38) A: $[_S\ [_{DP}$ every $[_{NP}$ farmer] who owns a donkey] $[_{VP^*}\ \beta_1\ [_{VP}$ beats the $R_2\ x_1\ ]]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ priest$]_F$ who owns a donkey] $[_{VP^*}\ \beta_1\ [_{VP}$ beats the $R_2\ x_1\ ]]]$

4.2.3.2 Descriptive content and bound pronouns

This section shows that regular bound pronouns too have descriptive content. If so, the optionality of focus in (1) is compatible with the assumption in (14). In fact, certain examples provide further evidence for it.

The constraint in (37) is incompatible with the account of optionality of focus in terms of variable names in section 4.2.2. There it was shown that focus on a regular bound pronoun, as in (39), can be licensed by allowing pronouns bound by distinct binding operators to bear distinct indices. The constraint in (37), however, disallows this option. Sauerland (2001, 2008) argues that regular bound pronouns can be descriptive pronouns too and that the possibility of focusing a bound pronoun can be

[120] Sauerland's (1998, 2001, 2004) variant of the idea around (14) is a definition of Givenness that is not-sensitive to variable names. Building the insensitivity to index names in the definition of Givenness forces the adoption of the indexical account of referential pronouns. Givenness, then, should be sensitive to some parts of the context (those that assign a value to indexical expressions) but not others (assignment functions).

[121] Once (37) is adopted, it is possible to give a different account for the optionality in (34), without the need for pure descriptions. The variant with no focus is licensed if the relational variables in both the target and the antecedent VP pick out the relation *λxλy.donkey-of(x)(y)*. The variant with focus is licensed if the value of the relational variable in the antecedent VP is *λxλy.y donkey-owned-by(x)(y)*, and that of the relational variable in the target VP *λxλy.y donkey-rent-by(x)(y)*.

attributed differences in descriptive content.

(39) A: Every actor said that Zelda praised him.
B1: No, every DIRECTOR said that Zelda praised him.
B2: No, every DIRECTOR said that Zelda praised HIM.

As in the case of donkey pronouns there are two possible implementations, one using pure descriptions and situations, and one using Skolem descriptions.[122] In the former case, regular bound pronouns do not differ from donkey pronouns; they are represented as in (40a) or (40b), and a sentence like (39A) has the informal semantics in (41).

(40) a. the P_n
b. it ~~NP~~

(41) *Informal semantics for (16A)*
For every individual *x* and sitiuation *s* such that *x* is an actor in *s*, there is an extended situation *s'* of *s*, in which *x* said that Zelda praised the unique actor in *s'*.

Elbourne (2005) proposes to treat bound pronouns as in (42). The index in (42) is a regular lexical item with syntactic category NP that denotes a property. To achieve the right result Elbourne (2005, 96) proposes the Pronoun Rule in (43). The index composes with the NP through Predicate Modification.[123]

(42) it NP n

(43) *Pronoun Rule*
For all indices n, $[\![n]\!]^g = \lambda x.x=g(n)$

To illustrate using the pure description analysis, consider the syntactic structure of (39) in (44). P_1, in (44), picks out the property *λx.actor(x)* and P_2 the property *λx.director(x)*. If so, F-marking in (44B) is obligatory since (44A) does not entail

[122] See footnote 120 for Sauerland's own account.

[123] Sauerland (2001, 2004) adopts a presuppositional account of descriptive content on regular bound pronouns, as in (i).

(i) $[\![\text{the}_n\ P]\!]^g$ presupposes that P(g(n))=1. When defined, $[\![\text{the}_n\ P]\!]^g = g(n)$.

Sauerland bases the proposal on Cooper's (1983) presuppositional account of gender on pronouns. I will argue in the next chapter based on gender , however, that Existential F-Closures are blind to presupposed material. If the descriptive content of bound pronouns is to license focus, then, it should not be given a presuppositional treatment.

$\exists x.praised(the\ director)(x)$.

(44) A: $[_S\ [_{DP}$ every actor$]\ [_{VP}$ said that Zelda $[_{VP}$ praised the $P_1\ ]]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ director$]_F\ [_{VP}$ said that Zelda $[_{VP}$ praised [the $P_2]_F\ ]]]$

To account for the variant without focus, Sauerland proposes that bound pronouns are ambiguous between descriptive pronouns and bare variables. The account, then, is compatible with the constraint in (37).

Recall that Sauerland does not have to adopt (37) to account for the examples considered so far. The necessity of (37) is the result of the focus theory adopted here that requires Givenness to be evaluated locally, at a level at which the pronoun is not bound. Sauerland provides empirical evidence for the necessity of descriptive content on bound pronouns.[124] One such case is what he calls the "antecedent affect". As shown in (45), focus is not licensed in case the antecedents of the pronouns in the target and the antecedent VP are identical.

(44) A: Every actor said that Zelda praised him.
B1: No, every actor said that LUCIE praised him.
B2: No, every actor said that LUCIE praised HIM. #

If focus on the bound pronoun is the result of having a distinct index from the pronoun in the antecedent VP, focus should be licensed. If, on the other hand, bound pronouns are treated as descriptions, as in (45), focus on *him* is not necessary, since

[124] Sauerland's main argument for the necessity of treating bound pronouns like descriptive pronouns, comes from the stress pattern of sentences with adnominal *however* in (i) where focus is obligatory. Sauerland argues that the semantics of adnominal *however* force Givenness to be evaluated at a level at which the bound pronoun is bound. If so, the target and the antecedent VPs have the same meaning despite any difference in variable names (they are 'alphabetic variants' of each other). Still, the two VPs contrast and focus is possible. Sauerland argues, then, that focus is not licensed because of differences in variable names, but because of differences in descriptive content. I want to point out that this behaviour is not restricted to sentences with adnominal *however*. The prosody of the subject in (i) resembles that of contrastive topics. Focus is obligatory in all examples with contrastive topics, as in, e.g., (ii). A discussion of the properties of contrastive topics and their interaction with stress on anaphors is beyond the scope of this dissertation.

(i) Every teacher believes that she'll win. Every GIRL, however, believes that SHE/ # she'll win.

(ii) Every $TEACHER_{CT}$ believes believes that she'll win, but every $GIRL_{CT}$ believes that SHE/ # she'll win.

(44A) entails $\exists x.praised(the\ actor)(x)$.

(45) A: $[_S\ [_{DP}$ every actor$]\ [_{VP}$ said that Zelda $[_{VP}$ praised the $P_1\ ]]]$
B: $[_S\ [_{DP}$ every actor$]\ [_{VP}$ said that $[_{DP}$ Lucie$]_F\ [_{VP}$ praised the $P_1\ ]]]$

If, however, bound pronouns are allowed to be treated as bare variables too, focus on *him* could sneak in through the structure in (46). In (46) the bound variables are treated like bare variables that have different names. Focus in (46) is obligatory.

(46) A: $[_S\ [_{DP}$ every actor$]\ [_{VP^*}\ \beta_1\ [_{VP}$ said that Zelda $[_{VP}$ praised $him_1\ ]]]]$
B: $[_S\ [_{DP}$ every actor$]\ [_{VP^*}\ \beta_2\ [_{VP}$ said that $[_{DP}$ Lucie$]_F\ [_{VP}$ praised $[him_2]_F\ ]]]]$

Since examples like (39) require a treatment of bound pronouns as bare variables next to their treatment as descriptions, regular bound variables too argue in favor of the constraint in (37). A focus theory, then, that forces Givenness to be evaluated locally, at a level at which the bound pronoun is not yet bound, requires that bound pronouns o-bound by different binding operators are not only allowed to bear identical indices, but they are forced to.

4.2.4 No indices

The constraint in (37) brings an account of bound pronouns based on indices and assignment functions very close to a variable-free treatment. The assumption in (37) ensures that two constituents that contain bound pronouns but not their respective binders will be semantically identical. This actually comes for free in a variable-free semantics. In this section I discuss briefly how a variable-free account could deal with the prosodic patterns of regular bvound and referential pronouns.pronouns.

Variable-free frameworks built a semantic system for natural language that maintains the idea that pronouns are akin to variables in predicate logic without using the apparatus of indices and assignment functions. I will very briefly present the basic framework in Jacobson (1999). Pronouns in Jacobson's system are uniformly interpreted as identity functions, as in (47).

(47) $[\![\text{him}]\!] = \lambda x.x$

Being identity functions of type *ee* pronouns cannot straightforwardly combine with a verb like *praised* of type *e,et*. Jacobson achieves composition by type-shifting the

verb-meaning using the g-rule in (48).[125]

(48) *The g-rule*
For any semantic types a, b and c: if *f* is a function of type <a, b>, then $g_c(f)$ is the following function of type <ca, c,b>: $\lambda V_{ca}. \lambda C_c. f_{ab}(V_{ca}(C_c))$.

The type-shifted verb ends up with the meaning in (49).

(49) $[\![\text{praised}_g]\!] = \lambda f_{ee} \lambda x \lambda y.\ \text{praised}(f(x))(y)$

It can now combine with the identity function, so that VP_T ends up with the denotation in (50).

(50) $[\![\text{praised}_g \text{ him}]\!] = [\lambda f_{ee} \lambda x \lambda y.\ \text{praised}(f(x))(y)] (\lambda x.x) = \lambda x \lambda y.\ \text{praised}(x)(y)$

Further applications of the g-rule will pass up the empty argument slot, up to the sentence level. A sentence like (51a), then, does not denote a proposition, but a predicate, as in (51bb). Propositional information is obtained only after applying the property to some contextually salient individual.

(51) a. Zelda praised him.
b. $\lambda x.\ \text{praised}(x)(\text{Zelda})$

Binding is done with the help of another type-shifting rule, the z-rule in (52). The z-rule applies to a verb and identifies the open argument slot inside its first argument (itself a function) with its second argument.

(52) *The z-rule*
For any semantic types a and b: if *f* is a function of type a,eb, then z(*f*) is the following function of type <ea, eb>: $\lambda G_{ea}. \lambda x.\ f(G(x))(x)$.

Consider the example in (53) at the moment of combining *said* with the sentence *Zelda praised him*. Assuming the simplified semantics for *said* in (54), we face a type-mismatch, since the internal argument of *said* is a property not a truth-value. One way to remedy the mismatch is to apply the g-rule on *said*. Composition can proceed, then, passing up the open argument slot and eventually lead to a referential

[125] The rule is simplified in that its syntactic correlates are not indicated. Notice that after the type-shifted verb composes with the pronoun in (50), the meaning of the VP *praised him* is the same as that of a regular transitive verb. It is then the difference in syntactic categeory that explains their distributional differences.

reading of the pronoun.

(53) Every director said that Zelda praised him.
(54) $[\![\text{said}]\!] = \lambda p_t \lambda x.\ \text{said}(p)(x)$

Alternatively, the z-rule applies on *said*. The result is given in (55).

(55) $[\![\text{said}_z]\!] = \lambda P_{et}\, \lambda x.\ \text{said}(P(x))(x)$

It is now possible to compose *said$_z$* with *Zelda praised him*, as in (56).

(56) $[\![\text{said}_z \text{ that Zelda praised him}]\!]$
$= [\lambda P_{et}\, \lambda x.\ \text{said}(P(x))(x)]\ (\lambda y.\ \text{praised}(y)(\text{Zelda}))$
$= \lambda x.\ \text{said}(\text{praised}(x)(\text{Zelda}))(x)$

Since (56) is a property, it combines with the generalized quantifier *every director* without further assumptions.

This very brief sketch of a variable-free derivation of (53) should be enough for current purposes. Consider the syntactic structure of (1) in (57).

(57) A: $[_S\ [_{DP}\ \text{every}\ [_{NP}\ \text{actor}]]\ [_{VP}\ \text{said}_z\ \text{that Zelda}\ [_{VP}\ \text{praised}_g\ \text{him}]]]$
B: $[_S\ [_{DP}\ \text{every}\ [_{NP}\ \text{director}]]\ [_{VP1}\ \text{said}_z\ \text{that Zelda}\ [_{VP1}\ \text{praised}_g\ \text{him}]]]$

As mentioned before, licensing of focus on *him* should be licensed already at the first VP-level, i.e. the first constituent subject to Cyclic Domains. This is the target VP, VP_1. Consider the two candidate structures of VP_1 and their Existential F-Closures, in (58).

(58) a. $[_{VP}\ \text{praised}_g\ \text{him}]$: $\exists x \exists y.\ \text{praised}(x)(y)$
b. $[_{VP}\ \text{praised}_g\ [\text{him}]_F]$: $\exists f_{ee} \exists x \exists y.\ \text{praised}(f(x))(y)$

Both structures are Given; *Every actor said that Zelda praised him* entails $\exists x \exists y.\text{praised}(x)(y)$, for y=Zelda and x=one of the actors. It also entails $\exists f_{ee} \exists x \exists y.\text{praised}(f(x))(y)$, for y=Zelda, x=one of the actors, and f=the identity function. Notice that Maximize Focus presupposition cannot choose between (58a) and (58b). $\exists x \exists y.\text{praised}(x)(y)$ entails $\exists f_{ee} \exists x \exists y.\text{praised}(f(x))(y)$, for *f*=the identity function. But also $\exists f_{ee} \exists x \exists y.\text{praised}(f(x))(y)$ entails $\exists x \exists y.\text{praised}(x)(y)$; what ever the choice of *f*, the result of applying *f* to *x* is an individual. Since the Existential F-Closures of the two competing structures symmetrically entail each other, Maximize Focus Presupposition allows both. So, whereas the approach based on indices derives

optionality by positing two different possible structures for bound variables, in the variable-free approach optioinality is a consequence of the semantics of pronouns and Maximize Focus Presupposition.

To complete the picture notice that both derivations proceed successfully. (59) follows a derivation in which *him* has not been F-marked. VP_1, in which the open slot has been bound, is Given. So is the sentence, as long as NP *director* is F-marked.

(59) a. $[_{VP1}$ said$_z$ that Zelda $[_{VP2}$ praised$_g$ him]]
: $\exists x.\text{said}(\text{praised}(x)(\text{Zelda}))(x)$

b. $[_S\ [_{DP}$ every $[_{NP}$ director$]_F]\ [_{VP1}$ said$_z$ that Zelda $[_{VP1}$ praised$_g$ him]]]
: $\exists x \exists P \forall x.\ P(x) \rightarrow \text{said}(\text{praised}(x)(\text{Zelda}))(x)$

(60) follows a derivation in which *him* has been F-marked. Again, both VP_1 and the sentence are Given.

(60) a. $[_{VP1}$ said$_z$ that Zelda $[_{VP2}$ praised$_g$ $[\text{him}]_F]]$
: $\exists f_{ee} \exists x.\text{said}(\text{praised}(f(x))(\text{Zelda}))(x)$

b. $[_S\ [_{DP}$ every $[_{NP}$ director$]_F]\ [_{VP1}$ said$_z$ that Zelda $[_{VP1}$ praised$_g$ $[\text{him}]_F]]]$
: $\exists f_{ee} \exists x \exists P \forall x.\ P(x) \rightarrow \text{said}(\text{praised}(f(x))(\text{Zelda}))(x)$

The free-variable approach, then, straightforwardly captures optionality of focus in the case of (1).

As it stands, the analysis does not account for referential pronouns. The variable free approach predicts optionality every time the antecedent entails $\exists x \exists y.\text{praised}(x)(y)$. This is the case in both (61) and (62). Yet, as shown in the previous section, focus is obligatory in (61), where him=Max, and obligatorily omitted in (62), where him=Oscar.

(61) A: John said that Zelda praised Oscar.
B1: No, MAX said that Zelda praised him. #
B2: No, MAX said that Zelda praised HIM.

(62) A: John said that Zelda praised Oscar.
B1: No, MAX said that Zelda praised him.
B2: No, MAX said that Zelda praised HIM. #

To account for (61) and (62) the variable-free approach should drop the assumption that referential and bound pronouns are treated alike, and adopt an indexical analysis of referential pronouns.

The account still predicts too much optionality for bound pronouns. Consider again the two examples in which optionality of focus with bound variable pronouns

breaks down. In example (63), repeated in (63), only the focused variant is felicitous under the bound variable reading of (63B).

(63) A: Every actor said that Zelda praised Oscar.
B1: No, every DIRECTOR said that Zelda praised him. #
B2: No, every DIRECTOR said that Zelda praised HIM.

At the level of the first VP, both the variants in (58) are Given, since *Every actor said that Zelda praised Oscar* entails both Existential F-Closures. The hope is, then, that the infelicitous variant will fail at some higher level. Indeed, the variant with F-marking fails at the level of VP_1; *every actor said that Zelda praised Oscar* does not entail the Existential F-Closure in (59a). Notice, however, that the same is true for the F-marked variant; *every actor said that Zelda praised Oscar* does not entail the Existential F-Closure in (60a). One could remedy that by, e.g., F-marking VP_1. But whatever options we have in the case of the F-marked variant, we also have in the non-F-marked variant. So there does not seem to be a way to distinguish between (63B1) and (63B2).

In the previous section it was argued that the infelicity of (63B1) can be independently explained, as a consequence of a violation of the constraint on the accommodation of the Current Question. The account required that an utterance like (63B2) unambiguously corresponds to the question *Who said that Zelda praised who*. Indeed, it was shown that focus on the bound pronoun is obligatory in (64), a pattern explained by the approach based on indices.

(64) A: Who said that Zelda praised who?
B1: Every DIRECTOR said that Zelda praised him. #
B2: Every DIRECTOR said that Zelda praised HIM.

The variable-free approach, then, could adopt the same explanation for (63), as long as it predicts the stress pattern in (64). This, however, is not the case. Consider the structure of (64B1) in (65). The Existential F-Closure of the target VP is $\exists x \exists y.praised(x)(y)$, which is entailed by the Existential Closure of the question, $\exists x \exists y.y$ *said that Zelda praised x*. Focus, then, should be optional, as in the case of example (1). The variable-free approach, then, encounters a problem in explaining examples (63) and (64), and more generally, the exhaustification implicatures of sentences with bouns pronouns.

(65) $[_S\ [_{DP}$ every $[_{NP}$ director]] $[_{VP1}$ said$_z$ that Zelda $[_{VP1}$ praised$_g$ him]]]

In example (44), repeated in (66), only the variant without focus is licensed. This was the example that the approach based on indices explained by positing descriptive content.

(66) A: Every actor said that Zelda praised him.
B1: No, every actor said that LUCIE praised him.
B2: No, every actor said that LUCIE praised HIM. #

The question arises then if a variable-free treatment of pronouns can be supplemented with a descriptive component. One way to think of the contribution of descriptive content in a variable-free system is to treat it as a restriction on the domain of the identity function denoted by the pronoun. In her account of stress on bound pronouns Jacobson (2000) proposes that "… pronouns denote the identity function over individuals in some contextually salient domain, and that if the context supplies different domains for each of the pronouns then they are in contrast (even though, strictly speaking, their meanings are the same)." Dimitriadis (2001) discusses in detail how Jacobson's idea can be implemented in order to account for the stress pattern of bound pronouns. He concludes this can only be achieved if domain restrictions are explicitly written at the definition of the function. The semantics of *him* in, e.g., (66A), is that in (67).This comes with a considerable cost for a variable-free semantics for pronouns, however, since it has to be assumed that the lexicon contains an infinite number of homophonous translations for pronouns

(67) $[\![\text{him}]\!] = \lambda x \iota y.\ y=x \ \&\ \text{actor}(x)$

The variable-free approach most naturally captures the fact that constituents containing "bound variables" will have the same meaning, even when the pronouns are not bound in that constituent. Moreover, it accounts successfully for optionality of focus on bound pronoun. To account for the stress pattern of referential pronouns it should drop the assumption that all pronouns have the same semantics and adopt an indexical analysis for referential pronouns. It also has to assume that there is an infinite number of homophonouns bound pronouns. In other words, the variable-free approach should drop on of its basic assumptions, that the simple semantics in (47) can explain all their uses. The account, as it stands, still faces problems with the stress pattern of examples (63) and (66) and, more generally, with the exhaustification implicatures of sentences with bound pronouns.

4.3 Complement Prominence

This section discusses the prosody of pronominal anaphors in constituents in which Complement Prominence applies. In Chapter 2 it was argued that Complement Prominence determines the prosody of verb phrases that contain no F-marked element. Structures of this kind arise when the VP is Given, as in (1) and (2), and in some cases when the VP is not Given, as in (3).[126]

(1) A: I asked Max to praise Lucie. What did Oscar do?
B: Oscar praised/ PRAISED LUCIE.
(2) A: Max praised Lucie.
B: No, OSCAR praised/ PRAISED LUCIE.
(3) A: What did Oscar do?
B: Oscar praised/ PRAISED LUCIE.

In all the VPs in (1) to (3) the verb and its complement are either prosodically on a par, or the verb subordinates to the object, exactly as predicted by Prosodic Asymmetry, repeated in (4).

(4) *Prosodic Asymmetry*
a. When a functor A precedes its complement B, the functor may be on a par with its argument or may be prosodically subordinated.
[`A `B] ; [A `B]
b. When a functor A follows the complement B, A is prosodically subordinated. [`B A]

This is the case in both (1)/ (3), where the relevant elements receive pitch accents, and in (2), where neither the verb not the object project to the top grid line and subordination has different accoustic correlates.

Section 4.3.1 discusses the behavior of pronominal anaphors in the environments in (1)-(3). It is shown that, just like reflexive anaphors, they always subordinate to the verb. In accordance to the Prosodic Asymmetry generalization, then, pronominal anaphors too should be treated like functions that take other functions as complements. Section 4.3.2 discusses the shortcomings of two possible alternatives.

[126] The VP in (2) will be F-marked, but only at the sentence-level. Complement Prominence does not apply in all cases in which a VP is not-Given. In some such cases, Cyclic Domains requires that the verb and the direct object are both F-marked.

4.3.1 Obligatory subordination

Pronominal anaphors subordinate to their sister constituents in all the environments in (1)-(3). Consider, first, the case of referential pronouns in (5)-(6), where him=Oscar.

(5) A: I asked Oscar's mother to praise him. What did Oscar's cousin do?
B1: She PRAISED him.
B2: She praised/ PRAISED HIM. #

(6) A: Oscar's mother praised him.
B1: No, Oscar's COUSIN PRAISED him.
B2: No, Oscar's COUSIN praised/ PRAISED HIM. #

In both cases, the target VPs are Given, without the need of any F-marking, since (5A) and (6A) entail $\exists x.praised(Oscar)(x)$. The structure of both VPs at the first level of evaluation of Cyclic Domains, then, is that in (7).

(7) $[_{VP}$ praised $him_1]$, where g(1)=Oscar

The same pattern arises with bound pronouns. As was shown in the previous section, the target VPs in (8B) and (9B) are Given; if they were not, the pronoun would be F-marked, project to the top grid line and receive a pitch accent. What is of interest now, is that the pronouns not only do not receive pitch accents, also subordinate to the verb.

(8) A: I asked every actor to say that Zelda praised him.
What did every director say that Zelda did?
B1: Every director said that Zelda PRAISED him.
B2: Every director said that Zelda praised/ PRAISED HIM. #

(9) A: Every actor said that Zelda praised him.
B1: No, every DIRECTOR said that Zelda PRAISED him.
B2: No, every DIRECTOR said that Zelda praised/ PRAISED HIM.#

The structure of both VPs at the first level of evaluation of Cyclic Domains, then, is that in (10).

(10) $[_{VP}$ praised $him_1]$

The same pattern holds for referential and bound pronouns, when the VP is not Given as in (11) and (12), respectively.

(11) A: What did Oscar's mother do?
B1: She PRAISED him.
B2: She praised/ PRAISED HIM. #

(12) A: What did every director say that Zelda did?
B1: Every director said that Zelda PRAISED him.
B2: Every director said that Zelda praised/ PRAISED HIM. #

At the first VP level, the two VPs are not Given without F-marking. The only option is to F-mark the VP-node. Alternative F-marking like *[$_{VP}$ [$_{V}$ praised]$_{F}$ [him$_{1}$]$_{F}$]* are not Given. The structure of both VPs, then, is the one in (13).

(13) [$_{VP}$ praised him$_{1}$]$_{F}$

The prosody of both structures in (10) and (13) is subject to Complement Prominence. If so, it falls under the Prosodic Asymmetry generalization in (4). Since pronouns obligatorily subordinate to verbs, the VPs exhibit the pattern in (4b). This pattern is only possible if pronouns are functions that take verbs as arguments.

In the remainder of this section, I will make an initial proposal for the implementing this requirement. I assume that the interpretation of a pronouns is dependent on the assignment function. To change the function-argument relation between a pronoun and a verb, pronouns are treated like functions of type *eet,et*, as in (14).[127]

(14) *Pronoun Rule*
$[\![\text{her}_n]\!]^g = \lambda R \lambda x.R(g(n))(x)$

Like reflexive anaphors, pronominal anaphors denote functions that take a two-place relation as an argument and return a property. This is done by saturating the first argument of the verb they combine with the individual corresponding to the value of the index. As shown in (15), the result of composing a verb with a pronoun is exactly the same as in the standard theory in which pronouns denote individuals.

(14) $[\![\text{her}_1]\!]^g ([\![\text{praised}]\!]^g)$ = $[\lambda R \lambda x.R(g(1))(x)](\lambda z \lambda y.\text{praised}(z))(y))$
= $\lambda x.[\lambda z \lambda y.\text{praised}(z))(y)]\ (g(1))(x)$

[127] As Irene Heim (p.c.) points out, the proposal weakens the predictive power of Complement Prominence, since any phrase of type *e* can be type-shifted to type *eet, et*. The proposal will only be complete if independent evidence is found to confirm the proposed difference between pronouns and other definite DPs.

= λx.[λy.praised(g(1)))(y)] (x)
= λx. praised(g(1)))(x)

To cover pronouns in subject positions, or in direct object positions of ditransitive verbs, pronouns are taken to denote a family of functions that saturate the first argument of the function they combine with, as in (15).

(15) *Pronoun Rule (extended)*
a. $[\![\text{her}_n]\!]^g = \lambda R_{e,et} \lambda x.R(g(n))(x)$
b. $[\![\text{her}_n]\!]^g = \lambda P_{et}.P(g(n))$
c. $[\![\text{her}_n]\!]^g = \lambda R_{e,eet} \lambda x \lambda y.R(g(n))(x)(y)$

The semantics in (14) are compatible with the analysis of the Focus Projection facts in section 4.2.2. Take, for example, the case of (16). Consider, first, the structure in (17). The meaning of the target VP is *λx.praised(g(1))(x)* and its Existential F-Closure is *∃x.praised(g(1))(x)*. This is entailed by the Existential Closure of the antecedent VP, *∃x. praised(g(1))(x)*, so the target VP is Given without the need of any F-marking, giving rise to the prosodic pattern in (16B1).

(16) A: Every actor said that Zelda praised him.
B1: No, every DIRECTOR said that Zelda praised him.
B2: No, every DIRECTOR said that Zelda praised HIM.

(17) A: $[_S\ [_{DP}$ every $[_{NP}$ actor$]]\ [_{VP^*}\ \beta_1$ said that Zelda $[_{VP}$ praised him$_1]]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ director$]_F]\ [_{VP^*}\ \beta_1$ said that Zelda $[_{VP}$ praised him$_1]]]$

The syntactic structure in (18) licenses the pattern in (16B2). The Existential Closure of the target VP without F-marking, *∃x.praised(g(2))(x)*, is not entailed by the Existential Closure of the antecedent VP, *∃x.praised(g(1))(x)*. F-marking the pronoun as in (18B) satisfies Cyclic Domains, since the Existential Closure of the target VP, $\exists Q_{eet,et} \exists x.\ Q\text{-}praised(x)$, is entailed by the Existential Closure of the antecedent VP, *∃x.praised(g(1))(x)*, for Q= λRλx.R(g(1))(x).

(18) A: $[_S\ [_{DP}$ every $[_{NP}$ actor$]]\ [_{VP^*}\ \beta_1$ said that Zelda $[_{VP}$ praised him$_1]]]$
B: $[_S\ [_{DP}$ every $[_{NP}$ director$]_F]\ [_{VP^*}\ \beta_2$ said that Zelda $[_{VP}$ praised him$_2]]]$

The rest of the data in section 4.2.2 follow in similar fashion. I used in this section an account that derives the optionality of focus on bound pronouns by allowing distinct indices on the pronouns in the target and antecedent VPs. As seen in section 4.2.4, a full account of focus on pronouns requires that F-marking is licensed by differences in descriptive content rather than indices, and that indices should in fact not be

allowed to differ. To bring together the results of section 4.2.4 with the results of the current section, the semantics in (14) should be enriched with descriptive content that restricts the range of the assignment of values to variables. I will not propose an implementation here and leave this small project for future work.

4.3.2 Alternatives

This section discusses two possible alternatives to the approach defended above that treat pronominal anaphors as individuals. An alternative along the same lines was considered for reflexive anaphors in section 3.5.3. The alternatives considered here are shown to fail for the same reasons the alternative in section 3.5.3 did.

4.3.2.1 Obligatory Givenness for pronouns

The first alternative relies on the intuition that pronouns obligatorily deaccent because they are always Given. An accounts like this are not compatible with Cyclic Domains since it relies on the pronoun being independently evaluated for Givenness. Let us, then, replace Cyclic Domains with Schwarzschild's Given Domains; i.e. let us assume that all constituents in an utterance are required to be Given.

For an example like (19) the idea is that the prosody of the VP is determined not by Complement Prominence, as argued for in the previous section, but by Focus Prominence. The syntactic structure of the VP should be as in (20), where *praised* is F-marked, since it is not Given, but *him* is not, since it is Given. The pronoun *him*, then, subordinates to *praised*.

(19) A: What did Oscar's mother do?
B1: She PRAISED him.
B2: She praised/ PRAISED HIM. #

(20) $[_{VP}\ [_{V}\ \text{praised}]_{F}\ \text{him}_1]$

Schwarzschild's original definition of Givenness for elements of type *e*, in (21), predicts that *him* in (19B) is Given, since it corefers with *Oscar*.

(21) *Givenness*
An utterance U counts as *Given* iff it has a salient antecedent A and, if U is of type e, then A and U corefer.

Since the prosody is the same for bound pronouns in the same environment, as shown in (22), (21) should be revised so that bound pronouns are always Given too.

(22) A: What did every director say that Zelda did?
B1: Every director said that Zelda PRAISED him.
B2: Every director said that Zelda praised/ PRAISED HIM. #

As discussed already in section 3.6.3.1 for reflexive anaphors, this can be achieved by replacing coreference with covaluation in the definition of Givenness, as in (23). Covaluation is defined by Heim (2008), as in (24).

(23) *Givenness (revised)*
An utterance U counts as *Given* iff it has a salient antecedent A and
a. if U is of type e, then A and U are covalued.
b. otherwise: A entails the Existential F-closure of U, modulo ∃-type shifting.

(24) *Covaluation*
Two DPs of type *e* are covalued in an utterance context c iff they have the same extension under every variable assignment that extends the assignment given in that context. i.e. α and β are covalued in an utterance context c iff $[\![\alpha]\!]^{c,g} = [\![\beta]\!]^{c,g}$ for all g such that $g_c \subseteq g$.

If, in addition, it is assumed that the syntactic structure of, e.g., (22B) is the one in (25), then, the bound pronoun is Given since it is covalued with the trace of the subject. I refer to section 3.6.3.1 for a presentation of the required changes in the syntax and semantics of binding.

(25) $[_S\ [_{DP}$ every $[_{NP}$ director$]_F]\ [_{VP^*}\ \beta_2\ [_{VP}\ t_2$ said that Zelda $[_{VP}\ [_V$ praised$]_F$ him$_2]]]$

Such an account faces two problems. The first problem is that it predicts pronominal anaphors to behave exactly like any other Given DPs of type *e*, like, e.g., proper names. It has been shown in section 2.4.3.3.1, however, that this is not the case. It was argued there that Givenness is not enough to license deaccenting of a proper name and that it is context-dependent. Contexts that allow a speaker to accommodate that Mary did something to John, as in (26), license deaccenting of John, but contexts, in which such accommodation is less likely, as in (27), do not.

(26) A: John was in the room, waiting for Mary. She would come in to deliver her verdict on John's future in the company. Mary came in. What did she do?
B1: She PRAISED him.
B2: She PRAISED John.
B3: She praised/ PRAISED JOHN. ?
B4: She praised/ PRAISED HIM. #

(27) A: John's mother was in the room. Mary came in. What did she do next?
B1: She PRAISED him.
B2: She PRAISED John. #
B3: She praised/ PRAISED JOHN.
B4: She praised/ PRAISED HIM. #

The prosody of pronominal anaphors, on the other hand, is rigid and does not depend on the context; pronominal anaphors always deaccent. The difference is surprising under a theory that assumes Given Domains, since the Givenness status of proper names and pronouns is exactly the same in the examples above. As argued in Chapter 2, the context dependence of proper names can be made to follow once one adopts Cyclic Domains. But Cyclic Domains is incompatible with the alternative considered here.

The alternative tried to explain the stress pattern of examples like (19) and (22) by claiming that the Givenness status of the pronoun and its sister constituent, the verb, is different. So, whereas one might have thought that both constituents are new, it was argued that the verb is new, but the pronoun is actually Given. The problem with this reasoning is that it cannot be extended to examples in which, according to Given Domains, the pronoun and its sister constituent are both Given. The relevant examples for both referential and bound pronouns are repeated in (28)-(31).

(28) A: I asked Oscar's mother to praise him. What did Oscar's cousin do?
B1: She PRAISED him.
B2: She praised/ PRAISED HIM. #
(29) A: Oscar's mother praised him.
B1: No, Oscar's COUSIN PRAISED him.
B2: No, Oscar's COUSIN praised/ PRAISED HIM. #
(30) A: I asked every actor to say that Zelda praised him.
What did every director say that Zelda did?
B1: Every director said that Zelda PRAISED him.
B2: Every director said that Zelda praised/ PRAISED HIM. #
(31) A: Every actor said that Zelda praised him.
B1: No, every DIRECTOR said that Zelda PRAISED him.
B2: No, every DIRECTOR said that Zelda praised/ PRAISED HIM.#

In all the examples above, Given Domains predicts that the structure of the VP will be the one in (32); i.e. that no F-marking is required. All theories of focus predict that in such cases prosody is determined by structural reasons, i.e. that arguments are

more prominent that functions.

(32) $[_{VP}$ praised him$_1$ $]_F$

Since pronouns in the alternative are DPs of type *e* that follow the function they are arguments of, Prosodic Asymmetry in (4) predicts that they should under (4a); i.e. that they should exhibit the pattern in the (B2) answers in (28)-(31). This is, of course, the wrong result.

4.3.2.2 Movement and r-Givenness

Wagner (2005) claims that the obligatory deaccenting of pronominal anaphors is the result of r(elative)-Givenness and Maximize Presupposition. Recall from section 2.6.2, that Wagner uses G- instead of F-marking. G in his system is an operator that attaches to a constituent every time its presupposition is met. The presupposition is that of r(elative)-Givenness, that states that a constituent can only be Given relative to its sister constituent, as in, e.g., (33).

(33) *Relative Givenness*
$[\![G_R]\!] = \lambda R \lambda x.\ \exists R' \in Alt(R)$: $[\![R'(x)]\!]$ is Given. $[\![R(x)]\!]$

The DP *John* in (34) is Given, since there is an alternative to *praised*, namely *dissed*, such that *dissed John* is Given. Since *John* is Given, Maximize Presupposition forces it to be G-marked, as in (35).

(34) A: Bill dissed John.
B: No, Bill PRAISED John.

(35) $[_{VP}$ praised Helen$_G$]

Wagner notices that the pronoun in examples like (36) is not r-Given; there is no alternative V to *praised* such that *V Oscar* is Given.

(36) A: Oscar came in. What did his mother do?
B1: She PRAISED him.
B2: She praised/ PRAISED HIM. #

He claims, however, that there is a possible syntactic structure in which the pronoun is r-Given. This structure involves movement of the pronoun from the direct object position to the S-node, as in (37). Movement forces the insertion of a binding operator that binds the trace left by *him*. S_1*, then, denotes the property

λx.praised(x)(Oscar's mother).

(37) $[_{S2}\ [_{S1^*}\ \beta_1\ [_{S1}$ she $[_{VP}$ praised $t_1]]]\ [him_1]_G\ ]$, where g(1)=Oscar

The pronoun in (37) is now r-Given; there exists an alternative to *λx.praised(x)(Oscar's mother)*, namely *λx.came-in(x)*, such that *[λx.came-in(x)](Oscar)* is Given, and will be G-marked. Since it is G-marked, (and S_1* is not), it will subordinate to S_1*. To predict obligatoriness of deaccenting, the movement of the pronoun should be obligatory. This follows from Maximize Presupposition; since the syntactic structure in (37) allows more G-marking than one in which the pronoun stays in-situ, it will always be favored by Maximize Presupposition.

The main objection to Wagner's alternative is that it too cannot distinguish between pronouns and other DPs of type *e*, such as proper names.[128] Replacing a pronoun with a proper name in the environment of (36) reverses the judgement. But everything that was said about (36), can be said about (38).

(38) A: Oscar came in. What did his mother do?
B1: She PRAISED Oscar. #
B2: She praised/ PRAISED OSCAR.

The only way out I see for Wagner's analysis is to assume that independent syntactic reasons force pronouns to move, and prohibit proper names from doing so. It is unclear what these reasons could be. Until such a theory is spelled out, Wagner's alternative is incomplete.

This section has argued that the prosody of constituents subject to Complement Prominence forces a semantics for pronouns (bound and referential) in which they are functions that take other functions as arguments. Alternatives have been shown to fail.

4.4 Conclusions

Sauerland (2001, 2008) argues that there are two sources for contrast between

[128] As Wagner himself acknowledges, the movement account is not compatible with his recursive model of prosodic assignment. The prosodic properties of the pronoun should be determined at the level of the first cycle, i.e. after it merges with the verb. I assume in the main text, that this problem can be overcome.

two bound pronouns; the first is a difference in the names of individual variables, the second is a difference in descriptive content. This chapter investigated the prosody of pronominal anaphors under the focus theory defended in Chapter 2. If the licensing of focus is evaluated locally; i.e. for constituents in which bound pronouns are free, as the focus theory requires, an approach that allows two bound pronouns to differ in variable names overgenerates. Bound pronouns, then, should have indistinguishable local interpretations. All contrast between bound pronouns, is the result of differences in descriptive content. Differences in descriptive content also explain the stress pattern of regular descriptive pronouns, like donkey and paycheck pronouns, as long as they are treated as Skolem rather than pure descriptions.

The stress pattern of examples in which prosody is determined by purely structural factors argues that pronouns should be treated as functions that take other functions as arguments. Alternatives that treat pronouns like elements of type *e* are incompatible with the focus theory in Chapter 2, and empirically inadequate.

Chapter 5

GENDER ON PRONOMINAL ANAPHORS

Gender features on bound and referential pronouns are standardly taken to be presuppositions that restrict the range of the value of variables. Recent literature has discovered a serious undergeneration problem for such an analysis in the case of the bound reading of examples with *only*. The usual response has been to treat gender as an agreement feature that is semantically inert. I argue on the basis of gender mismatches in Greek that the agreement analysis is too strong and that a semantic account is necessary that builds Existential F-Closures blind to presuppositional content. I also discuss the behavior of gender mismatches in examples with ellipsis. It is argued that the behavior of speakers that are sensitive to a strict syntactic identity on ellipsis provide further evidence against the agreement analysis. It is possible, then, to treat all gender features on bound pronouns as inherent features that are visible at the semantic module, perhaps even in the case of grammatical gender.

5.1 Introduction

It is a ubiquitous fact about natural languages that certain formal aspects of morphological or syntactic information can be duplicated within a sentence. Consider, for example, the case of subject-verb agreement in the English example in (1).

(1) a. He likes/ * like ice-cream.
b. I/ you/ we/ you/ they like/ * likes ice-cream.

The morphological shape of the verb systematically covaries with the choice of subject. The relevant aspects of information in this case are *person* and *number* of the subject; a singular, third-person subject, as in (1a), requires the presence of the morpheme *–s*, while subjects of any other feature specification , as in (1b), cannot tolerate it. The morpheme *–s* is linked to the set of features {singular, 3rd person}.

The same set of features, then, is visible in two different positions in the sentence, on the subject, and on the verb. Such duplication is redundant for interpretative purposes; one could drop verbal morphology altogether with no loss of

information. Notice that one cannot say the same about dropping the pronominal subject. Although this is of course an incidental fact about the verbal morphology paradigm of English, the robust generalization still holds that such agreement dependencies are asymmetrical. Let us assume, then, that controlled elements, in this case the verb, enter a derivation underspecified for certain features and that those features need to be specified at some point during the derivation. The features can be specified under a dependency between the controlled element and its controller, in this case the subject DP, that will match the features of the controller with those of the controlled element. In the tradition of the Minimalist Program features on controlled elements are called *uninterpretable*. Although *uninterpretability* is a technical syntactic notion that restricts the kind of dependencies certain features can enter into, the choice of terminology is not accidental. If features on controlled elements are redundant and dependent on the features of some other element, it is natural to assume that these features do not contribute to the interpretation.

Redundancy and dependency, however, are not in themselves arguments that the semantic component is blind to such features. A recent line of research in the interface between syntax and semantics attempts to make the question of interpretability in the semantic component an empirical issue. The dependency that has been investigated in some more detail is that between a pronominal anaphor and its antecedent. Consider the example in (2) under its bound variable interpretation. The features of the bound pronoun covary with the features of its antecedent; any change in the value of *person*, *number*, or *gender* leads to ungrammaticality. The dependency between a bound pronoun and its antecedent, then, looks very much like an agreement dependency such as subject-verb agreement in (1).

(2) a. Every boy did his homework.
b. * Every boy did my homework.
c. * Every boy did their homework.
b. * Every boy did her homework.

The empirical domain that has been used to test the interpretability of the features on bound pronouns is the interpretation of sentences with operators like *only*, as in (3), and of sentences with ellipsis, as in (4).

(3) Only Mary did her homework.
(4) John did his homework, and Mary did too.

Both exclusives and ellipsis are focus-sensitive phenomena, so the interpretation of (3) and (4) depends (directly or indirectly) on the focus meanings (*Existential F-*

Closures or *Focus Values*) of the relevant utterances. The interpretability of the features on bound pronouns is checked by investigating the contribution of the features in the focus meanings. The consensus in the literature is that person, number and gender features do not contribute to the focus meaning. The question that arises, then, is whether uninterpretability should be a consequence of the agreement mechanism or a consequence of the way focus meanings are built.

This chapter investigates the interpretability question for the case of gender features on bound pronouns. It focuses on the case of Greek, a language with a grammatical gender system. Grammatical gender systems provide a fertile ground for agreement mismatches to arise. I argue on the basis of such agreement mismatches for the necessity of a semantic mechanism that builds Existential F-Closures that are not sensitive to the contribution of gender features.

The remainder of the chapter is organized as follows. Section 5.2 presents the issue of interpretability assuming a presuppositional semantics for gender features and a familiar undergeneration problem that such an account faces. Section 5.3 presents Heim's (2005) solution in terms of an agreement mechanism, Feature Transmission. Section 5.4 applies Feature Transmission in the case of agreement mismatches in Greek revealing its limitations. Section 5.5 presents a semantic alternative (also shortly considered by Heim) that captures the full range of facts by building focus values that are blind to presuppositional content. Section 5.6 discusses gender mismatches in the context of ellipsis and argues that the existence of a group of speakers that are sensitive to a strict syntactic identity condition on ellipsis argues against Feature Transmission. Section 5.7 concludes.

5.2 Gender features on pronouns

5.2.1 Presuppositional semantics for gender

There is no doubt that the lexical content of referential pronouns restricts the range of their interpretation. The pronoun, in (1), can be coreferent with *Oscar* in (1a), but not with *Zelda*, in (1b).

(1) a. Did you hear about Oscar$_1$? Mary praised him$_1$.
b. Did you hear about Zelda$_1$? Mary praised him$_1$. #

A by now standard treatment of (1), that originates with Cooper (1983), is to treat the

semantics of gender features on pronouns as presuppositions that restrict the range of the assignment of values to variables. According to the presuppositional treatment, a sentence with a referential pronoun like (1a), asserts that *Mary loves g(1)*, and presupposes that g(1) is male. The presuppositional treatment is supported by sentences that embed bound pronouns under propositional operators like *think* in (2) (from Büring 2005). If gender was part of the literal meaning, (2) would mean something like 'Alfred thinks that he is female and that he missed the bus'. Such a reading is not available, however. Under the presuppositional analysis, (2) asserts that Alfred thinks that Alfred missed the bus, and presupposes that Alfred is female. The sentence is infelicitous to the extend that one assumes that the name Alfred is used exclusively for male individuals.[129]

(2) Alfred$_1$ thinks that she$_1$ missed the bus.

I present here the implementation of Cooper's analysis in Heim and Kratzer (1998) and Heim (2005), according to which gender features denote partial identity functions, as in (3).[130] Those map an individual to itself, as long as the individual has the relevant property.[131]

(3) a. ⟦ masc ⟧ = λx. x is male.x
b. ⟦ fem ⟧ = λx. x is female.x
c. ⟦ it ⟧ = λx. x is not human.x

Gender features are syntactically adjoined to bare pronominals, as in (4a). DP' will end up being Spelled-Out as *she*. Given that Heim and Kratzer's definition of

[129] A possible alternative is to treat gender features as predicates selected by a definite determiner. All presuppositional effects, then, are attributed to the presuppositions of the determiner. See Kratzer (200X) for such a view.

[130] Heim (2005) extends the presuppositional analysis to other phi features (see also Schlenker 2003 for person, Sauerland 2004 for number, among others). I won't be discussing other phi features and I will only be presenting those aspects of the debate that are relevant for gender.

[131] The same presuppositional treatment is possible if one treats pronouns as descriptive pronouns, as in section 4.2.3.2. In a variable free semantics, a presuppositional treatment of gender features requires that they restrict the domain of identity functions, as in (i).

(i) a. ⟦ him ⟧ = λx. x is male.x
b. ⟦ her ⟧ = λx. x is female.x
c. ⟦ it ⟧ = λx. x is not human.x

As far as I can see, the arguments in the remainder of the chapter do not depend on the choice of approach. I use the variables approach for ease of exposition.

Functional Application is sensitive to partiality, the presuppositions of the gender feature project to DP' such that it has the denotation in (4b). Further applications of Functional Application project the presupposition up the tree. The sentence in (1a), then, will only get a denotation if g(1) is male, as required.

(4) a. $[_{DP'}$ fem $[_{DP}$ pro$_1$]]
b. $[\![$ she$_1$ $]\!]^g$ = g(1), if g(1) is female, undefined otherwise

The same treatment is given to gender features on bound pronouns. Note first that even in the case of bound pronouns there is reason to believe that gender features contribute to the interpretation. The gender feature on *her* in (5a) does seem to be redundant; it could be dropped without loss of any information, since 'femaleness' is already entailed by *girl*. There exists a class of nouns, however, like *student*, *doctor*, *lawyer* etc. that are gender-neutral. In the case of such gender-neutral nouns (GN-nouns), as in (5b), it is the female feature on the bound pronoun that contributes the information that the students are female.

(5) a. Every girl did her homework.
b. Every student did her homework.

(5b), then, asserts that the property *λx.x went to x's room* is true of every student, and presupposes that every student is female. Two additional ingredients are needed to derive the correct presupposition for (5b). Consider, first, the syntactic structure of (5b) in (6).

(6) $[_S$ $[_{DP}$ every $[_{NP}$ student]] $[_{VP*}$ β_1 $[_{VP}$ did $[_{DP'}$ fem $[_{DP}$ pro$_1$]]'s homework]]]

Functional Application will project the presupposition up to the VP node. In order to make sure that the presupposition projects at the VP* node, we need a version of the Binder Index Evaluation Rule that is sensitive to partiality. This is done in (7) (after Heim and Kratzer's 'pedantic' version of Predicate Abstraction).

(7) *Binder Index Evaluation Rule (revised)*
For any natural number n, $[\![[_{VP*}\ \beta_n\ [_{VP}\ \ldots\ ]]\ ]\!]^g$
= λx. $[_{VP}\ \ldots\ ]$ is in the domain of $[\![\ ]\!]^{g[n\rightarrow x]}$. $[\![[_{VP}\ \ldots\ ]\ ]\!]^{g[n\rightarrow x]}$ (x)

According to (7), the VP* in (6) will end denoting the partial function in (8).

(8) $[\![[_{VP*}\ \ldots\ ]]\ ]\!]^g$ = λx. x is female. x did x's homework

The second thing one needs to make sure of is that *every* can deal with arguments that denote partial functions and that the presupposition of the predicate is projected universally. The entry in (9) achieves that by requiring that every individual that is a student is in the domain of VP*. Since the domain of VP* includes female individuals only, it follows that that all students are female, as desired.

(9) $[\![\text{every}]\!]^g = \lambda P_{et} \lambda P'_{et}.\ \forall x: P(x) = 1 \rightarrow x \in \text{dom}(P').\ \forall x: P(x) = 1 \rightarrow P'(x) = 1.$

Consider, however, the sentence in (10). At least for a number of speakers of English, (10) is felicitous in a context in which *every* quantifies over students of both sexes.[132]

(10) Every student did his homework.

This can be captured if the semantics of *masc* in (3a) are replaced with the weaker semantics in (11). Assuming (11), (10) carries the trivial presupposition that every student is an individual.

(11) $[\![\text{masc}]\!] = \lambda x.\ x$

The question, then, is why (10) is infelicitous in a context in which the students are all female. Sauerland (2004) points out that this is the result of the interaction between the weak semantics of *masc* and the principle of Maximize Presupposition, repeated here in (12) from section 2.4.3.2.1. This interaction gives rise to what Sauerland calls "Implicated Presuppositions".

(12) *Maximize Presupposition*
If φ, ψ are both true in a context *c*, and the presuppositions of ψ are stronger than those of φ, and are met in the context of utterance *c*, then one must use ψ in *c*, not φ.

In a context where all the students are female, the presupposition of (10) is trivially satisfied. The presupposition of (13a) in (13b) is also satisfied, however, and since

[132] The variant with *masc* in (10) for cases of cases of mixed or unknown gender is now rapidly (at least in colloquial variants) being replaced with a variant that uses 3rd person plural pronouns that are unspecified for gender.

(i) Every student did their homework.

(13b) is stronger than the presupposition of (10), it must be chosen. Choosing (10) in a context in which all the students are female amounts to a violation of Maximize Presupposition.

(13) a. Every student did her homework.
b. Every student is female.

Consider, next, the case of a masculine referential pronoun, as in (14), with the presupposition in (14b). Maximize Presupposition blocks the masculine pronoun being used to refer to a female individual. The reasoning goes as following. If g(1) were female, the speaker should have used, by Maximize Presupposition, a feminine pronoun, since it carries stronger presuppositions. It follows that the speaker knows that g(1) is not female. If g(1) is not female, it must be male.[133] [134]

(14) a. Mary praised him_1.
b. g(1) is an individual

5.2.2 A problem for interpreted gender on bound pronouns

The presuppositional account in the previous section makes a proposal for the semantics of gender features that unifies the treatment of referential and bound pronouns. Heim (1994, 2005) and Kratzer (1998) note a problem with the presuppositional account of phi-features on bound pronouns. The account seems to undergenerate in examples with *only*, like (10) (from Heim 2005) under its bound variable reading.

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[133] For discussion of the similar issues regarding the interpretation of gender within DPs, see Sauerland (2006) and Percus (2008).

[134] The arguments in the remainder of the chapter could also have been made with examples containing reflexive, rather than pronominal anaphors. There is no difficulty in giving a presuppositional treatment for reflexive anaphors. In the lexical approach adopted here, gender features restrict the domain of the reflexivizing function, as in (i).

(i) a. ⟦ himself ⟧ = λRλx. x is male.R(x)(x)
b. ⟦ herself ⟧ = λRλx. x is female.R(x)(x)
c. ⟦ itself ⟧ = λRλx. x is not human.R(x)(x)

(15) Only Mary did her homework.

Under its bound variable reading (15) asserts that Mary did her homework and that no other relevant individual did his or her homework. (15) is judged false if some male individual, say John, did his own homework. As the authors above point out, however, the presuppositional account predicts that the sentence should be judged true in this scenario. Heim (2005) demonstrates using the semantics for *only* in (16), where C is a salient set of relevant individuals.

(16) $[\![\text{only}_C]\!]^g = \lambda x\, \lambda P.\ \forall y\colon y \in \text{dom}(P) \,\&\, y \in C \,\&\, P(y) = 1 \rightarrow y = x$

Given the presuppositional semantics of gender, *[$_{VP^*}$ β_1 [$_{VP}$ did [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s homework]]* has the semantics in (8); it is only felicitous if its domain includes female individuals only. According to the semantics in (16), then,(15) actually makes no claim about male individuals like John, since they are not in the domain of the relevant predicate. If so, (15) should be felicitous as long as Mary did her own homework and no other female individual did her own homework, so it should be judged true in a scenario in which Mary did her homework, John did his homework, and no one else did their homework. As we saw, however, this is not the correct prediction; the sentence is judged false in this scenario.

As Heim mentions, the same is true in an analysis of *only* that treats it as a propositional operator that associates with focus. Let me illustrate using the pragmatic account of association with focus presented in section 2.5.1. According to that account, *only* has the semantics in (17), where C is a set of salient propositions. The set C is subject to the constraint in (18).

(17) only (C)(φ) = 1 iff $\forall \psi \in$ C: ψ=1 → ψ= φ.
(18) $C \subseteq \{ p \mid p \rightarrow \text{ExFClo}(\varphi) \}$

For (15) to come out as false in the scenario considered above, *John did his homework* should entail the Existential F-Closure of *[$_S$ [$_{DP}$ Mary]$_F$ [$_{VP^*}$ β_1 [$_{VP}$ did [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s homework]]]*. But given the semantics of gender above, the Existential F-Closure of the prejacent in (15) is the one in (19), which is equivalent to *∃x. x is female and x did x's homework*. This is clearly not entailed by *John did his homework*. *John did his homework* is, thus, not in the domain of *only* and (15) makes no claim about its truth or falsity. (15), then, should be true in a scenario in which John did his own homework.

(19) Existential F-Closure($[_{S...}]$) = ∃x. x is female. x did x's homework

The problem persists even if the pragmatic account in section 3.7.2 is adopted according to which *only* conventionally associates with the Current Question. Again, the theory will make the right prediction only if *John did his homework* is a member of C. In order to be one, it should a member of the Hamblin-set of the Current Question. A Current Question that would allow that is the one in (20).

(20) Who did his homework?

Since (20) is not given explicitly it should be accommodated. For (20) to be a candidate for accommodation, its Existential Closure in (16) should entail the Existential F-Closure in (19). This, however, is not so.

(21) Existential F-Closure((15)) = ∃x.x did x's homework

The account, then, cannot predict that (20) is a possible Current Question. The only possibility is the Current Question in (22a) with the Existential Closure in (22b). (22b) does entail the Existential F-Closure in (20), but, then, *John did his homework* is not a member of the Hamblin-set of (22a), and not a member of C. If *John did his homework* is not a member of C, then its truth or falsity is irrelevant for the truth of (15), and (15) should come out true in the given scenario.

(22) a. Who did her homework?
b. ∃x. x is female & x did x's homework

Since native speakers judge (15) false in a scenario in which John did his homework, it seems that they can accommodate (20) on the basis of (21), something not predicted by our current theory. In fact, it is not necessary to think about accommodation of the Current Question to make the same point. The felicity of the discourse in (23) is a simpler instance of the same phenomenon. (18B) violates Cyclic Domains, since *John did his homework* does not entail *∃x. x is female. x did x's homework*, and is predicted to be infelicitous. Yet, it is not. The example in (23), then, is further evidence that there is something wrong with the account of gender in the previous section.

(23) A: John did his homework.
B: No, MARY did her homework.

5.3 Feature Transmission

Heim (2005), Kratzer (1998, 2009), von Stechow (2003), and others, argue that a solution to the undergeneration problem would be to allow phi-features on bound pronouns to be semantically absent, i.e. to allow for structures with featureless bound pronouns, like, e.g., the one in (24b) for (24a).

(24) a. Only Mary did her homework.
b. $[_S$ only $[_S [_{DP}$ Mary$]_F [_{VP^*} \beta_1 [_{VP}$ did $[_{DP}$ pro$_1$]'s homework]]]]

If it is (24b) that is fed into the semantic component, all analyses of *only* mentioned above predict that (24a) will be judged false in a context in which John did his homework. This is so, since all theories would now predict that *John* or *John did his homework* will be a member of the domain of *only*.

One possible way to derive the structure in (24b), argued for in Heim (2005) and Kratzer (1998, 2009) is to allow bound variables to enter the derivation without any phi-features. It is only at the PF side of the grammar that bound pronouns inherit the features of their binders. The proposal assumes, then, that there exists an *agreement* dependency between a bound pronoun and its antecedent, just like between a verb and its subject, and proposes that the dependency is established at PF rather than in narrow syntax.[135] Heim's mechanism is the one in (25).[136] [137]

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[135] For independent arguments that agreement is a PF-phenomenon see Bobaljik (2008).

[136] I have substituted Heim's "binds" with "a-binds" in (25), since this the only way to establish a dependency between the bound pronoun and its antecedent given present choices for the syntax of binding. The definition of a-binding from section 3.2.2 is repeated in (i).

(i) *Argument Binding (a-binding)*
α a-binds β iff i.α is a DP
ii.α c-commands β
iii. α is coindexed with β
iv. there is no DP γ other than α intervening between α and β such that ii. and iii. hold.

[137] Reuland (2010) observes that SE-anaphors such as Dutch *zich*, Russian *s'eba*, and possessive anaphors such as Scandinavian *sin* and Russian *svoj* do not spell-out the features of their binders, contra the expectations of Feature Transmission (and also Kratzer's 2009 mechanism). He builds a system based on deletion of features that predicts the behaviour of SE-anaphors, while being compatible with Heim's and Kratzer's main insight.

(25) *Feature Transmission under variable binding*
In the derivation of PF, features of a DP may be copied onto variables that it a-binds.

Bound pronouns can enter the derivation without any phi-features. It is a requirement of the PF component, then, that they are specified for all person, number, and gender features before they can be Spelled-Out. Feature Transmission is compatible with phi-features being base-generated on bound pronouns. In fact, the agreement analysis naturally divides phi-features between those that are base-generated and are interpreted, and those that are the result of Feature Transmission and are not interpreted. Features on referential pronouns, that do not meet the structural description of Feature Transmission will always enter the derivation fully specified. A sentence like (26a), then, under a bound variable construal allows the two structures in (26b) and (26c) (I disregard features other than gender again).

(26) a. Mary did her homework.
b. $[_S$ Mary $[_{VP^*}\ \beta_1\ [_{VP}$ did $[_{DP}\ pro_1\ ]$'s homework]]]
c. $[_S$ Mary $[_{VP^*}\ \beta_1\ [_{VP}$ did $[_{DP'}$ fem $[_{DP}\ pro_1\ ]]$'s homework]]]

The semantic difference between the (26b) and (26c) is detectable in examples with *only* as in (27). As discussed above, (27b) is the only candidate that solves the undergeneration problem. The existence of (27b) allows that (27a) is judged false in a context in which John did his homework.[138]

(27) a. Only MARY did her homework.
b. $[_S$ only $[_S\ [_{DP}$ Mary$]_F\ [_{VP^*}\ \beta_1\ [_{VP}$ did $[_{DP}\ pro_1\ ]$'s homework]]]]
c. $[_S$ only $[_S\ [_{DP}$ Mary$]_F\ [_{VP^*}\ \beta_1\ [_{VP}$ did $[_{DP'}$ fem $[_{DP}\ pro_1\ ]]$'s homework]]]]

The existence of (27c), however, predicts that (27a) could also be judged true in the same scenario. In order to exclude (27c) in 'mixed-gender contexts', it can be assumed that *only* projects universal presuppositions, similar to *every* in (9). The easiest way to formulate this is using Heim's semantics for *only* in (28) (see Heim 2005, footnote 28).

(28) $[\![only_C]\!]^g = \lambda x\ \lambda P.\ \forall y \in C: y \in dom(P).\ \forall y: y \in dom(P)\ \&\ y \in C\ \&\ P(y) = 1 \rightarrow y = x$

[138] Notice that every account that solves the undergeneration problem with *only* also solves the problem of licensing deaccenting in cases like (2.3) in section 5.2.

The denotation of (27c) will be defined in a context in which all the relevant individual are female. This does not mean that (27c) is necessary, however; both (27b) and (27c) give rise to adequate truth-conditions in such contexts.

Things are not different in case the antecedent is a quantificational DP. (29a) corresponds to the two structures in (29b) and (29c). (29c) is, again, redundant, but still derived.

(29) a. Every girl decorated her room.
b. $[_S$ every girl $[_{VP^*}\ \beta_1\ [_{VP}$ decorated $[_{DP}\ pro_1\ ]$'s room]]]
c. $[_S$ every girl $[_{VP^*}\ \beta_1\ [_{VP}$ decorated $[_{DP'}$ fem $[_{DP}\ pro_1\ ]]$'s room]]]

Consider next an example where *girl* in (29) is substituted with a GN-noun like *professor* in (30). As mentioned above in the discussion around (5b), the feminine feature on the pronoun seems to be the only source of information regarding the gender of individuals in the domain of *every*. If so, (30c) with a base-generated and interpreted gender feature should be a possible structure since it generates the right presupposition that every professor is female. (30b), on the other hand, should be excluded, since it predicts that (30a) should be possible in a context in which the set of professors is of mixed gender. (30b) can be excluded as a PF violation. As mentioned above, pronouns can only be Spelled-Out if they are fully specified for person, number, and gender features. Assuming that quantificational DPs headed by GN-nouns are not specified for gender and, hence, have no gender feature to transmit, pronouns bound by such DPs will only be specified for gender if they enter the derivation already specified, as in (30c). If not, as in (30b), they will never be specified for gender and they will fail to be Spelled-Out.

(30) a. Every professor decorated her room.
b. $[_S\ [_{DP}$ every $[_{NP}$ professor]] $[_{VP^*}\ \beta_1\ [_{VP}$ decorated $[_{DP}\ pro_1\ ]$'s room]]]
c. $[_S\ [_{DP}$ every $[_{NP}$ professor]] $[_{VP^*}\ \beta_1\ [_{VP}$ decorated $[_{DP'}$ fem $[_{DP}\ pro_1\ ]]$'s room]]]

Percus (2006) argues, however, that the feminine feature on the pronoun might be the result of agreement even in cases like (30). Percus discusses the example in (31a).

(31) a. Only the professor decorated her room.
b. $[_S\ [_S$ only $[_{DP}$ the professor] $[_{VP^*}\ \beta_1\ [_{VP}$ decorated $[_{DP}\ pro_1\ ]$'s room]]]]
c. $[_S\ [_S$ only $[_{DP}$ the professor] $[_{VP^*}\ \beta_1\ [_{VP}$ decorated $[_{DP'}$ fem $[_{DP}\ pro_1\ ]]$'s room]]]]

Like in (30), also in (31a) it is the feminine feature on the bound pronoun that seems to specify the gender of the antecedent, so it has to be interpreted. In the agreement account considered here this means that the feminine feature is base-generated and not a product of Feature Transmission, as in (31b). (31c), then, is excluded for the same reasons as (30b) above. If (31c), however, is the only possible structure for (31a), the account predicts that (31a) should be judged true in a context in which some male individual decorated his own room.[139] Percus reports that the sentence is judged false in such a context, just like (27) is. He proposes to fix the problem by allowing *the professor* to be specified for gender. Two possible implementations come to mind, one in which a feminine feature is adjoined on the DP, as in (32a), and one in which a null affix with the semantics of the noun *female* is attached on the noun *professor* itself, as in (32b).

(32) a. $[_S [_S$ only $[_{DP}$ fem $[_{DP}$ the professor]] $[_{VP^*}\ \beta_1\ [_{VP}$ decorated $[_{DP}\ pro_1\ ]$'s room]]]]

b. $[_S [_S$ only $[_{DP}$ the professor-fem] $[_{VP^*}\ \beta_1\ [_{VP}$ decorated $[_{DP}\ pro_1\ ]$'s room]]]]

In any case, one could assume that the antecedent in (32a/b) is a legitimate controller for agreement. If so, the feminine feature on the pronoun can be treated as the result of Feature Transmission and derive a structure with a feature-less bound pronoun. If so, it is predicted that (31a) will be judged false in the crucial context, since *John decorated his* room will end up in the domain of *only*.

Once an analysis of (31) along these lines is accepted, Percus argues, it can be extended to (30) and derive the presupposition that every professor is female i.e. allowing *every professor* to bear a *fem* feature along the lines of (32b). If so, it is possible to derive a structure like (33) for (30).

(33) $[_S [_{DP}$ every $[_{NP}$ professor-fem]] $[_{VP^*}\ \beta_1\ [_{VP}$ decorated $[_{DP}\ pro_1\ ]$'s room]]]

As Percus himself points out, more needs to be said about how (33) ends up presupposing that every professor is female and is not taken to mean that every female professor decorated her own room. At this point let me simply assume that this can be done.[140] Notice that examples like (30) were the only empirical argument to allow any inherent/ base-generated features on bound pronouns at all. In all other cases, the presuppositions of base-generated gender features were always

[139] Or come out as a presupposition failure, if one assumes the semantics of *only* in (28).

[140] See Percus (2006, footnote 28) for discussion.

redundant. If Percus' analysis of (30) and (31) is right, then, it seems possible to adopt the generalization in (34).

(34) *Generalization 1*
Gender features on bound pronouns are never interpreted.
(i.e. they are always the result of Feature Transmission)

5.4 Agreement mismatches

In this section I will argue that i. the generalization in (34) is wrong and that Feature Transmission cannot account for all cases in which the undergeneration problem arises. In order to do so, I will use evidence from Modern Greek, a language with a grammatical gender system, focusing on cases of agreement mismatches between the gender feature of the bound pronoun and the gender feature of its antecedent.

5.4.1 Grammatical vs. semantic gender in Greek

Greek is a language with a grammatical gender system. Grammatical gender is an inherent property of noun stems. The gender of a noun, *masculine*, *feminine*, or *neuter*, largely coincides with the inflectional class the noun belongs to.[141] In cases where there is no one-to-one correspondence between inflectional class and gender marking, the gender specification can be read off the gender specification of other elements agreeing in gender with the noun. Most determiners and all DP-internal adjectives are specified for gender. Grammatical gender is also visible on predicative adjectives (including secondary predication), verbal particles, relative and resumptive pronouns, and referential and bound pronouns.

Gender dependencies are treated as prototypical cases of syntactic agreement. Consider, e.g., the case of agreement between a subject and a predicative adjective in (1), where the gender specification of the adjective covaries with the gender specification of the subject.

[141] For detailed analyses of the inflectional classes of Greek nominal and their interaction with gender marking, see Ralli (2002), Alexiadou (2004).

(1) O kipos ine omorfos / * omorfi / * omorfo.
the.masc garden.masc is pretty.masc pretty.fem pretty.neu
'The garden is pretty.'

As already mentioned in section 3.9.2.2, referential pronouns also agree in gender with their discourse antecedent, as in (2).

(2) Pira tin epitaji ke tin / * ton / * to edhosa sto Jani.
I-got the.fem paycheck.fem and her him it I-gave to-the John
'I got the paycheck and gave it to John.'

Dowty and Jacobson (1988) point out that gender on referential pronouns cannot be the result of a syntactic mechanism; such mechanisms, by definition, do not operate across sentences. In fact, the same observation can be made in cases where the antecedent is not linguistically expressed. Imagine (3) being uttered in a context in which a friend of the speaker is standing right in front of her holding a ball. The clitic pronoun in (3) is feminine, as the gender specification of the noun *ball* , i mpala 'the.fem ball.fem'.

(3) Dhos ti / * ton / * to mu!
give her him it me
'Give it (the ball) to me!'

Dowty and Jacobson propose to extend the presuppositional account of gender to cover agreement in grammatical gender in examples like (2) and (3). It is obvious that grammatical gender in the examples above does not correspond to some coherent semantic property. The idea of Dowty and Jacobson is that the semantic component can refer to properties of language itself since linguistic facts themselves are part of the world. A pronoun like *her* in (3), then, will only be defined if its referent has "[…] the property that the most salient common noun that would be chosen to refer to [it] in the present context of utterance has the [feminine] gender feature." (Dowty and Jacobson 1988, 98). If some analysis along these lines is necessary for (2) and (3), one might wonder if it can be extended to cover all cases of gender agreement, like, e.g., (1). Jacobson and Dowty, indeed, propose just that.

I still want to argue that (1) and (2)/ (3) should be handled by separate mechanisms. The class of human denoting nouns in Greek are also specified for gender. In the great majority of cases, there is a correspondence between the natural gender of the individuals in the domain of the noun and the grammatical gender of the noun. There are two exceptions: a class of gender-neutral nouns, like the ones in

(4a), whose gender features is determined by the natural gender of their referent and manifested on the definite determiner, and a class of nouns, as in (4b), that have a neuter gender feature irrespective of whether they refer to male or female denoting nouns, or gender-neutral nouns.

(4) a. o / i dhikijoros / ipalilos / ipurjos
the.masc / the.fem lawyer / employee / minister
b. to pedhi / melos / ajori / koritsi
the.neu child / member / boy / girl

What (4a) reveals already is that gender features in Greek do, at least in some cases, correspond to natural genders. The existence of the class of nouns in (4b), on the other hand, allows us to test cases of mismatches in gender agreement. Consider the case of subject verb agreement in (5).

(5) To koritsi ine omorfo / * omorfi.
the.neu girl.neu is pretty.neu pretty.fem
'The girl is pretty.'

The agreement mismatch variant of (5) is ungrammatical; agreement in formal features is required. Notice, however, that if gender features in Greek can correspond to natural genders and subject-verb agreement is subject to the semantic, presuppositional analysis, it is not clear why *fem* is not possible in (5). The ungrammaticality follows if subject-verb agreement is a different species of agreement than the one in (2)/ (3) and is the result of a strictly syntactic agreement mechanism that only has access to grammatical gender features.

Even though agreement mismatches are not possible in the case of subject-verb agreement, they are possible in the case of referential and bound pronouns, in (6) and (7) respectively.

(6) Pira tilefono to koritsi ke tu/ tis zitisa na vjume.
I-took telephone the.neu girl and it/ her I-asked subj we-go-out
'I called the girl and asked her out.'
(7) Kathe koritsi diakosmise to dhomatio tis / tu.
every girl.neu decorated the room her its
'Every girl decorated her room.'

Unlike (5), then, (6) and (7) allow *fem* to be interpreted. In the case of gender-neutral nouns, like (8) and (9), it is *fem* on the pronoun that specifies the gender of the domain of *every*. (Notice that *kathe* 'every' is never specified for gender)

(8) Kathe pedhi diakosmise to dhomatio tis / tu.
every child.neu decorated the room her its
'Every child decorated her room.'

(9) Kathe dhikijoros diakosmise to dhomatio tis.
every lawyer decorated the room her
'Every lawyer decorated her room.'

If *fem* on (6)-(9) were the result of syntactic agreement, it is unclear why it shouldn't also be possible in (5). I assume, then, that, *fem* in (6)-(9) is base-generated, and is subject to the familiar presuppositional account of section 5.2. It immediately follows that Generalization 1 in section 5.3 is not right, at least not cross-linguistically.

The question arises, of course, how *neu* is licensed in (6)-(8). (6) is no different than (2)/ (3). The bound pronouns in (7) and (8) could be assumed to be subject to the same mechanism that explains (6), or be subject to syntactic agreement. In what follows I will assume the latter, i.e., that antecedent-bound pronoun dependencies are subject to Feature Transmission. This allows us to keep the correlation between base-generation and interpretability for gender features on bound pronouns; base-generated features are interpreted, features that are the result of agreement are not.[142]

5.4.2 Syntactic structures for bound pronouns in Greek

Feature Transmission under the assumption that it can only target grammatical gender allows the following syntactic structures for bound variable construals in Greek. I focus on the more interesting case of human-denoting antecedents.

5.4.2.1 Match in gender

The example in (10) is no different than the parallel examples in English. The feminine feature on the bound pronoun can either be the result of Feature Transmission, as in (10b), or be base-generated, as in (10c). In the latter case, the

[142] The issue of the licensing of inherent/ base-generated gender is usually termed in terms of "syntactic vs. semantic agreement". See Corbett (1991) for a rich typological description of gender and a first cross-linguistic generalization in terms of an agreement hierarchy. Wechlser and Zlatic's (2003) book on gender in Serbo-Croatian is the most detailed investigation of gender in a single language I am aware of.

feature is interpreted, even if redundantly so. (For the reader's comfort, I use pseudo-English in the syntactic structures of the Greek examples)

(10) a. I Maria dhiakosmise to dhomatio tis.
the.fem Mary decorated the room her
'Mary decorated her room.'
b. [$_S$ [$_{DP}$ the.fem Mary.fem] [$_{VP^*}$ β_1 [$_{VP}$ decorated [$_{DP}$ pro$_1$]'s room]]]
c. [$_S$ [$_{DP}$ the.fem Mary.fem] [$_{VP^*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]]

The same possibilities arise in the case of (11). Like its English counterpart, (11a) is judged false in a scenario in which some male individual decorated his own room. The structure in (11b) allows this reading and no undergeneration issue arises.

(11) a. Mono i Maria dhiakosmise to dhomatio tis.
only the.fem Mary decorated the room her
'Only Mary decorated her room.'
b. [$_S$ only [$_S$ [$_{DP}$ the.fem Mary.fem] [$_{VP^*}$ β_1 [$_{VP}$ decorated [$_{DP}$ pro$_1$]'s room]]]
c. [$_S$only [$_S$[$_{DP}$ the.fem Mary.fem][$_{VP^*}$$\beta_1$[$_{VP}$decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]]

5.4.2.2 Mismatch in gender

Cases of gender mismatch are more revealing. Consider first a case in which the antecedent is not specified for gender, as in (12). The only possible structure is one with a base-generated gender feature, as in (12b). The feature is thus interpreted generating the intuitively correct presupposition that all the relevant lawyers are female.

(12) a. Kathe dhikijoros diakosmise to dhomatio tis.
every lawyer decorated the room her
'Every lawyer decorated her room.'
b. [$_S$ [$_{DP}$ every [$_{NP}$ lawyer]] [$_{VP^*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]]

In case the antecedent is specified for *neuter*, the pronoun can either bear *neuter*, as in (13), or *feminine*, as in (14). In the former case, the gender feature of the pronoun is the result of agreement, so the pronoun enters the derivation gender-less, as in (13b). In the former case, the gender feature on the pronoun is obligatorily base-generated, as in (14b).

(13) a. To koritsi/ pedhi mas dhiakosmise to dhomatio tu.
the.neu girl.neu child.neu our decorated the room its
'Our girl/ child decorated her room.'

b. [$_S$ [$_{DP}$ the.neu girl.neu/child.neu our] [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP}$ pro$_1$]'s room]]]

(14) a. To koritsi/ pedhi dhiakosmise to dhomatio tis.
the.neu girl.neu child.neu decorated the room her
'The girl/ child decorated her room.'

b. [$_S$ [$_{DP}$ the.neu girl.neu/child.neu our] [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]]

Given the account of the undergeneration problem in terms of gender-less syntactic structures allowed by Feature Transmission, our account of gender in Greek makes a straightforward prediction. Since (15a) allows a gender-less structure, but (16a) does not, it it expected that, in a context in which some male individual decorated his own room, (15a) will be judged false, but (16a) will be judged true (or be a presupposition failure).

(15) a. Mono to koritsi/ pedhi mas dhiakosmise to dhomatio tu.
only the.neu girl.neu child.neu our decorated the room its
'Only our girl/ child decorated her room.'

b. [$_S$ only [$_S$ [$_{DP}$ the.neu girl.neu/child.neu our] [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP}$ pro$_1$]'s room]]]

(16) a. Mono to koritsi/ pedhi mas dhiakosmise to dhomatio tis.
only the.neu girl.neu child.neu our decorated the room her
'Only our girl/ child decorated her room.'

b. [$_S$ only [$_S$ [$_{DP}$ the.neu girl.neu/child.neu our] [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]]

The prediction is not borne out, like any other example with *only*, (16a) too is judged to be false in such a scenario. We are left, then, with the following puzzle: how is it possible for *fem* to be interpreted and be able to restrict its antecedents to female referent, but at the same time remain invisible for the purposes of calculating the semantic requirements of *only*?

5.5 Blind Existential F-Closures

Heim (2005, handout 2005) discusses an analysis that can provide a solution to the puzzle above. The analysis is named "Spector's alternative" and is attributed by Heim

to Benjamin Spector (p.c.). I present here Heim's (2005, handout) implementation. The basic idea is to combine a 2-dimensional semantics for focus (as in Alternative Semantics), with a 2-dimensional semantics for presupposition. Each expression is associated with an assertion value, a presupposition value and a focus value. The crucial assumption of this analysis is that assertion values are dissociated from presuppositions and that the presupposition value of a constituent does not enter the computation of its focus value.

An example like (14) in 5.4.2.2 is associated with the values in (1).

(1) a. *assertion value*: [λx.x decorated x's room](the child)
b. *presupposition value*: the child is female
c. *focus value*: {x decorated x's room |x ∈ D_e}

Assume, in addition, that *only* is a sentential operator associated with a focus on the subject, and has the semantics in (2).

(2) *'only S'*
a. *assertion value*: that all elements of S's focus value except S's assertion value are false
b. *presupposition value*: assertion value of S & presupposition value of S

Applying the semantics in (2) in the example in (16) from 5.4.2.2, the result is the semantics in (3), that give us exactly the right result. Since *John decorated his room* is a member of {x decorated x's room |x ∈ D_e}, the sentence will be judged false if *John decorated his room* turns out to be true. At the same time, the feminine gender feature is interpreted in order to derive the presupposition value, such that (16) from 5.4.2.2 is only defined if the child is female, as desired.

(3) a. *assertion value*: the child decorated his own room, and every φ in {x decorated x's room |x ∈ D_e} is false
b. *presupposition value*: the child is female

The account can be also be implemented using the Schwarzschildian semantics of focus adopted in this dissertation. Nothing would need to be changed in our treatment of *only* as long as Existential F-Closures are built that are blind to presuppositional content. For example, the Existential F-Closure of the prejacent of (16b) in (4a) should be as in (4b).

(4) a. [$_S$ [$_{DP}$ the.neu girl.neu/child.neu our] [$_{VP^*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]
b. $\exists$x. x decorated x's room

In her sketch above, Heim proposes that such alternative values can be built if the assertion and presupposition values of an utterance are separated. I will not provide a formal account of how presupposition-less Existential F-Closures can be built in Schwarzschild's system. Let me just mention that a possibility that readily lends itself is to implememt existential type-shifting in terms of an existential operator that is a 'plug' (in Kartunnen's 1973 notation) for presupposition projection. I assume in the remainder of this chapter that this can be done.

Notice that the semantic account predicts the correct truth- and admittance-conditions for all the examples with *only* that have been considered so far for both Greek and English, even under a structure with base-generated gender features. Consider, e.g., example (11) from section 5.4.2.1, repeated here in (5a), under the syntactic structure in (5b). Given the semantic account, the Existential F-Closure of the prejacent in (5b) will be as in (5c). Every account of *only* considered so far, then, will predict that *John went to his own room* is a member of the domain of *only* and that the sentence is judged to be false in a context in which John actually did decorate his own room.

(5) a. Mono i Maria dhiakosmise to dhomatio tis.
only the.fem Mary decorated the room her
'Only Mary decorated her room.'
b. [$_S$only[$_S$[$_{DP}$ the.fem Mary.fem][$_{VP^*}$ β_1[$_{VP}$ decorated [$_{DP'}$fem [$_{DP}$ pro$_1$]]'s room]]]

Indeed, the semantic account is proposed by Heim as a general alternative to Feature Transmission; adopting the semantic account neutralizes the empirical argument from *only*-sentences for syntactic structures with featureless bound pronouns. It is possible, then, to adopt the generalization in (6).

(6) *Generalization 2*
Gender features on bound pronouns are always interpreted
(modulo Existential F-Closures).

5.6 Ellipsis

Let us go back at the end of section 5.2.1; i.e. let us take as our starting point the presuppositional account of gender presented there. The first question to ask is whether the status of ellipsis in cases like (1) can be taken as evidence in favour or against the presuppositional analysis.

(1) Mary decorated her room. John did too.

Section 5.6.1 argues that examples like (1), pose an undergeneration problem similar to the one with *only*. Section 5.6.2 evaluates the possible solutions on the basis of gender mismatches in Greek and argues for the necessity of a semantic account. Section 5.6.3 examines the consequences of the existence of a group of speakers that disallows gender mismatches in ellipsis across the borard.

5.6.1 Ellipsis and the presuppositional account of gender

The evaluation of (1) depends on the choice of account of ellipsis. There are countless ones to choose from and not all of them can be discussed here. I will make the basic assumption that ellipsis is a species of phonological deletion of syntactic material, and discuss two of the licensing conditions that have been proposed to capture the distribution of deletion of VPs, a syntactic identity condition and a weaker focus-sensitive condition.

5.6.1.1 Interpreted gender and syntactic identity

Assume the syntactic identity condition in (2), a version of the condition first proposed by Sag (1976) and Williams (1977).

(2) *Syntactic identity condition on VP-ellipsis*
A VP α can be elided iff there is a salient VP β whose syntactic structure is identical to that of VP α.

Since ellipsis is deletion, an example like (3a) corresponds to the structure in (3b),

where strike-through indicates the structure that has been deleted.[143] Let us call the sentence containing the ellipsis *target sentence* and the sentence preceding it *antecedent sentence*. Deletion of VP* in the target sentence is licensed since it is identical to VP* in the antecedent sentence.[144]

(3) a. Mary decorated her room. Helen did too.
b. [$_{TP}$ Mary [$_{T'}$ T [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]]].
[$_{TP}$ [$_{TP}$ Helen [$_{T}$ did ~~[$_{VP*}$ β_1 [$_{VP}$ decorate [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]~~] too]

In the case of (1), repeated in (4a), syntactic identity predicts ellipsis not to be licensed. The VP* in the second sentence is not identical to the VP* in the first; the pronouns differ in their gender specification.

(4) a. Mary decorated her room. John did too.
b. [$_{TP}$ Mary [$_{T'}$ T [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]]].
[$_{TP}$ [$_{TP}$ John [$_{T}$ did ~~[$_{VP*}$ β_1 [$_{VP}$ decorate [$_{DP'}$ masc [$_{DP}$ pro$_1$]]'s room]]~~] too]

Let us call such cases in which the bound pronouns in the elided and the antecedent VP* differ in gender specification *ellipsis mismatches.* What is then the status of ellipsis mismatches? The consensus in the literature on ellipsis is that such cases are, indeed, possible. As Ross (1967) (cf. Jacobson 2000) points out, however, there exists a minority of speakers that do not readily accept examples like (1)/ (4a). Let me assume at this point that the example is grammatical and come back to the minority judgment in section 5.6.3. If so, ellipsis mismatches appear to be evidence against the syntactic identity condition in (2).

[143] It is not possible to keep using S-nodes any longer. In (3b) I follow standard assumptions according to which sentences are the projections of T(ense)-heads. Subjects are located at [Spec, T]. Auxiliaries like *do* are instances of the head T. I have also assumed in (3b) that *too* is an adjunct to TP.

[144] I have allowed bound pronouns to bear the same index, contra Heim's No Meaningless Co-indexing principle (see section 4.2.2). If we decide to keep Heim's principle the syntactic identity condition needs to be weakened so as to allow contra-indexing in (3b). These are issues pertinent to a correct characterization of the licensing condition of VP-ellipsis, but not directly relevant to the gender-related facts that are of interest here.

5.6.1.2 Interpreted gender and e-Givenness

In response to counterexamples to syntactic identity, semantic identity conditions on ellipsis have been developed. Rooth (1992) was the first to argue for a semantic identity condition that is focus sensitive. He proposes the Appropriate Contrast Condition in (5), which refers not only to the elided constituent itself, but also to constituents containing it.

(5) *Appropriate Contrast Condition*
Ellipsis is licensed if the denotation of an antecedent constituent is contained in the focus value of a constituent containing the elided material.

Merchant (2001) develops a version of the Appropriate Contrast Condition in terms of Existential F-Closures. The basic idea is that ellipsis is a version of deaccenting, but with a sticter licensing condition. Next to Givenness, then, Merchant defines the notion of e(lliptical)-Givenness in (6).

(6) *e-Givenness*
An expression E counts as e-Given iff E has a salient antecedent A and, modulo ∃-type shifting, A entails the Existential F-Closure of E, and E entails the Existential F-Closure of A.

Ellipsis is subject to the Focus Condition in (7).

(7) *Focus Condition on ellipsis*
An XP α can de deleted only if α is e-Given.

The VP* in the target sentence in (3) is e-Given relative to the VP* in the antecedent sentence, and ellipsis is licensed. Ellipsis in (4), however, is still predicted to be out. The constituents in the antecedent sentence that could potentially license e-Givenness are the VP* and the TP. Even though they both entail the Existential F-Closure of the VP* in the target sentence (given the weak semantics for *masc*), as shown in (8), neither is entailed by the Existential F-Closure of the VP* in the target sentence, as shown in (9).

(8) a. ∃x. x is female & x decorated x's room → ∃x. x decorated x's room
b. Mary decorated her room → ∃x. x decorated x's room

(9) a. ∃x. x decorated x's room ↛ ∃x. x is female & x decorated x's room
b. ∃x. x decorated x's room ↛ Mary decorated her room

Since neither of the two conditions I am considering can license the ellipsis in (4), I conclude that the problem lies not with the account of ellipsis, but with the presuppositional account of gender on bound pronouns. If so, ellipsis mismatches pose a second undergeneration problem for the account in section 5.2.1.

5.6.2 The solutions

The same possible solutions can be considered with the undergeneration problem in the case of ellipsis, as with the undergeneration problem in the case of *only*. I first discuss Feature Transmission and show that gender mismatches in Greek prove the account, once more, inadequate. I then discuss the semantic account.

5.6.2.1 Feature Transmission

Heim (2005) notices the undergeneration problem for ellipsis and suggests that Feature Transmission will be able to account for it. Let me illustrate using the accounts of ellipsis considered above. As discussed in section 5.3 Feature Transmission allows that pronouns enter the derivation featureless and acquire their featural specification only at the PF level. If so, the syntactic structure of, e.g. (3), before Spell-Out, is the one in (10).

(10) a. Mary decorated her room. Helen did too.
b. $[_{TP}$ Mary $[_{T'}$ T $[_{VP*}$ β_1 $[_{VP}$ decorated $[_{DP}$ pro_1]'s room]]]].
$[_{TP}$ $[_{TP}$ Helen $[_{T'}$ did ~~$[_{VP*}$ β_1 $[_{VP}$ decorate $[_{DP}$ pro_1]'s room]]~~] too]

The VP*s are no different in the case of (4); they too contain featureless pronouns.

(11) a. Mary decorated her room. John did too.
b. $[_{TP}$ Mary $[_{T'}$ T $[_{VP*}$ β_1 $[_{VP}$ decorated $[_{DP}$ pro_1]'s room]]]].
$[_{TP}$ $[_{TP}$ John $[_{T'}$ did ~~$[_{VP*}$ β_1 $[_{VP}$ decorate $[_{DP}$ pro_1]'s room]]~~] too]

Both Syntactic Identity and the Focus Condition can now license ellipsis in (11). As long as it is assumed to operate before Spell-Out, Syntactic Identity is satisfied since the VP* in the target sentence is identical to the VP* in the antecedent sentence. The Focus Condition is also licensed since the VP* in the target sentence is e-Given relative to the VP* in the antecedent sentence. Their Existential F-Closures are identical (*$\exists$x. x decorated x's room*) so they symmetrically entail each other.

5.6.2.2 Feature Transmission and gender mismatches in Greek

Once again, Feature Transmission undergenerates in examples with gender mismatches in Greek. Consider first the example in (12). (12) is no different than its English counterpart and the same issues arise.[145] Adopting Feature Transmission its structure is the one in (12b) and ellipsis is licensed by both conditions the way described above.

(12) a. I Maria dhiakosmise to dhomatio tis.
the.fem Mary decorated the room her.
O Janis episis.
the.masc John.masc too
'Mary decorated her room. John did too.'

b. [$_{TP}$ [$_{DP}$ the.fem Mary.fem] [$_{T'}$ T [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP}$ pro$_1$]'s room]]]]
[$_{TP}$ [$_{TP}$ [$_{DP}$ the.masc John.masc] [$_{T'}$ T ~~[$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP}$ pro$_1$]'s room]]]~~] too]

Consider next cases for which it was argued that the gender feature on the bound pronoun cannot be the result of agreement. These are cases of gender mismatches, as in (13). The pronoun in the VP* in the antecedent sentence is specified for gender while the pronoun in the VP* in the target sentence is not.

(13) a. To koritsi dhiakosmise to dhomatio tis.
the.neu girl.enu decorated the room her.
O Janis episis.
the.masc John.masc too
'The girl decorated her room. John did too.'

[145] The example in (12) is not exactly parallel to its English counterpart in that the ellipsis in the Greek example is a case of Bare Argument Ellipsis rather than VP-ellipsis. As far I have been able to see, however, Bare Argument Ellipsis in Greek does not differ from VP-ellipsis in English, at least not in the distribution of strict and sloppy identity of pronouns, the licensing of 'sloppy' readings of indexicals and voice mismatches, the possibility for 'vehicle change', or the behaviour of ellipsis mismatches with features other than gender. I will assume, then, that the licensing condition of Bare Argument Ellipsis in Greek and VP-ellipsis in English is the same. The reader should be aware, of course, that I cannot at this point exclude the possibility that the two phenomena might turn out to be dissimilar in a way that affects the conclusions of section 5.6.

b. [$_{TP}$ [$_{DP}$ the.neu girl.neu] [$_{T'}$ T [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]'s room]]]]
[$_{TP}$ [$_{TP}$ [$_{DP}$ the.masc John.masc] [$_{T'}$ T ~~[$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP}$ pro$_1$]'s room]]]~~] too]

A similar situation arises for cases in which the antecedent of the pronoun is not specified for gender, as in (14). Ellipsis in (14a) is licensed, even under a reading in which the doctors in the target sentence are all male, or of mixed gender. If so, the bound pronoun in the target sentence must be inherently specified for *masc*.

(14) a. Kathe dhikijoros dhiakosmise to dhomatio tis. Kathe jatros episis
every lawyer decorated the room her. every doctor too
'Every lawyer decorated her room. Every doctor did too.'

b. [$_{TP}$ [$_{DP}$ every lawyer] [$_{T'}$ T [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]'s room]]]]
[$_{TP}$[$_{TP}$[$_{DP}$ every doctor] [$_{T'}$ T ~~[$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ masc [$_{DP}$ pro$_1$]'s room]]]~~] too]

Syntactic Identity clearly rules both (13) and (14) out; the VP*s in the target and antecedent sentences are not identical, in both cases. The same is true for the Focus Conditions. Consider, for example, (13). The best candidate constituent for e-Givenness to be licensed is the VP* in the antecedent sentence, but there is no symmetric entailment between the Existential F-Closure of that VP* and the VP* in the target sentence; *∃x. x decorated x's room* does not entail*∃x.x is female. x decorated x's room*. Similar reasoning rules out ellipsis in (14a) under the indicated reading.

5.6.2.3 Blind Existential F-Closures

The second solution to the undergeneration problem with *only* was a semantic account that allowed us to generate Existential F-Closures that are blind to presuppositional content. The account succeeds in the case of ellipsis too.

Consider example (13) under the assumption that no Feature Transmission takes place. The syntactic structure is, then, as in (15). Since the semantic account does not force feature-less bound pronouns, it is clearly incompatible with Syntactic Identity. The Focus Condition, on the other hand, is satisfied; given the semantic account, the Existential F-Closure of both VP*s is *∃x. x decorated x's room*, so there is symmetric entailment between them. The VP* in the target sentence is, then, e-Given and can be elided. Similar reasoning licenses ellipsis in (14).

(15) a. To koritsi dhiakosmise to dhomatio tis.
the.neu girl.enu decorated the room her.
O Janis episis.
the.masc John.masc too
'The girl decorated her room. John did too.'

b. [$_{TP}$ [$_{DP}$ the.neu girl.neu] [$_{T'}$ T [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]]]
[$_{TP}$ [$_{TP}$[$_{DP}$the.masc John.masc][$_{T'}$T [~~$_{VP*}$ β_1 [$_{VP}$ decorated[$_{DP'}$ masc [$_{DP}$ pro$_1$]]'s room]]]]~~] too]

In fact, similar reasoning licenses ellipsis in all the examples above, with no need of Feature Transmission. The semantic account, then, stands as a general alternative to Feature Transmission.

5.6.3 Deviant ellipsis mismatches

As mentioned before in section 5.6.1.1, Ross (1967) reports that there exists a group of speakers that systematically judge ellipsis mismatches to be infelicitous; (16) is unacceptable in its bound reading. The same picture is drawn more recently by Jacobson (2000).

(16) Mary decorated her room. John did too. #?

Greek speakers also divide into two groups. Group A, the majority group, accepts ellipsis mismatches across the board, as reported in section 5.6.2.2 . Group B, a minority group, does not. Examples (17) and (18) are not felicitous under the bound reading.[146]

[146] Notice, however, that even speakers of Group B find ellipsis mismatches more palatable when the strict reading is nonsensical, as in, e.g., (i). Perhaps the best way to characterize the behavior of Group B speakers is that for them the bound reading in case of an ellipsis mismatch is a last resort attempt to make the sentence interpretable.

(i) a. I Maria efere ena maxeri mazi tis. O Janis episis. ?
the.fem Mary brought a knife with her. the.masc John too
'Mary brought a knife with her. John did too.'

b. To koritsi efere ena maxeri mazi tis. O Janis episis. ?
the.neu girl.neu brought a knife with her. the.masc John too
'The girl brought a knife with her. John did too.'

(17) a. I Maria dhiakosmise to dhomatio tis.
the.fem Mary decorated the room her.
O Janis episis. #?
the.masc John.masc too
'Mary decorated her room. John did too.'

(18) a. To koritsi dhiakosmise to dhomatio tis.
the.neu girl.enu decorated the room her.
O Janis episis. #?
the.masc John.masc too
'The girl decorated her room. John did too.'

It also seems that speakers of Group B only allow ellipsis in (19), in contexts where all the doctors are female, although the judgements are less clear in this case.[147]

(19) Kathe dhikijoros dhiakosmise to dhomatio tis. Kathe jatros episis.
every lawyer decorated the room her. every doctor too
'Every lawyer decorated her room. Every doctor did too.'

Given the necessity of blind Existential F-Closures one might want to argue that Group B speakers do not allow blind Existential F-Closures. The same speakers, however, do not show any such effect in the case of *only*. Example (20) is judged false in a context in which some male individual decorated his own room. Speakers of Group B, then, must allow for blind Existential F-Closures.[148]

(20) Mono to koritsi dhiakosmise to dhomatio tis.
only the.neu girl.neu decorated the room her
'Only our girl/ child decorated her room.'

Since the difference is restricted to ellipsis, I claim that speakers of Group B are sensitive to Syntactic Identity, whereas speakers of Group A are not.[149,150] If so,

[147] In Spathas (2009) I reported that speakers of Greek uniformly allow gender mismatches in (17), but not in (18)/ (19). I had to conclude, then, that there is a residue of Feature Transmission and Syntactic Identity for all speakers of Greek. Further work with native speakers led me to conclude that this was the wrong assessment of the facts, and that speakers (largely) divide in the two groups described in the main text.

[148] Initial investigation shows that speakers of Group B show the same pattern for all phi-features.

[149] Or, to keep with the observation in footnote 146: speakers of Group B are also sensitive to a low ranked, violable constraint, Syntactic Identity.

[150] The account in terms of Syntactic Identity predicts that gender mismatches in cases of

example (18) will always be infelicitous, since the relevant VP*s will never be identical. The same is true for example (19); the two VP*s will only be identical if both quantifiers range over female individuals only. To predict the infelicity of (17), however, the additional assumption is needed that Feature Transmission is *never* possible. Consider the syntactic structure of (17) with, in (21a), and without Feature Transmission, in (21b). The Feature Transmission variant in (21a) licenses ellipsis, since the VP*s in the target and antecedent sentence are identical. Only under (21b) is Syntactic Identity violated, as desired.

(21) a. [$_{TP}$ [$_{DP}$ the.fem Mary.fem] [$_{T'}$ T [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP}$ pro$_1$]'s room]]]]
[$_{TP}$ [$_{TP}$ [$_{DP}$ the.masc John.masc] [$_{T'}$ T ~~[$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP}$ pro$_1$]'s room]]]~~] too]

b. [$_{TP}$[$_{DP}$the.fem Mary.fem][$_{T'}$ T [$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ fem [$_{DP}$ pro$_1$]]'s room]]]]
[$_{TP}$[$_{TP}$[$_{DP}$the.masc John.masc][$_{T'}$T ~~[$_{VP*}$ β_1 [$_{VP}$ decorated [$_{DP'}$ masc [$_{DP}$ pro$_1$]]'s room]]]~~] too]

Notice that the argument in favor of blind Existential F-Closures in sections 5.5 and 5.6.2.3 showed that blind Existential F-Closures are necessary not that Feature Transmission should be dispensed with. The existence of Group B, then, is evidence against Feature Transmission.

What does it mean for the dependency in gender features between bound pronoun and antecedent to dispense with Feature Transmission? It can mean one of two things. The first option is to keep considering the dependency a syntactic agreement dependency, but drop the assumption that it is established at PF. If so, the syntactic structure is generated under syntactic agreement and Syntactic Identity rules ellipsis out. The second option is to stop considering the dependency a syntactic agreement dependency and adopt a semantic account of grammatical gender on bound pronouns, in the lines of Dowty and Jacobson's account of grammatical gender on referential pronouns mentioned in section 5.4.1.

I currently have no definitive way to distinguish between these two options. A possible direction future research could take is to investigate the behavior of other

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deaccenting as in (i), repeated from section 5.2, will be felicitous even for speakers of Group B. I only have my own judgement to report at this point. Being a speaker of Group B myself, I do find a contrast between (17) and (i).

(i) A: John did his homework.
B: No, MARY did her homework.

gender dependencies that are treated in terms of syntactic agreement, like, e.g., (22).

(22) O kipos ine poli omorfos. To spiti episis.
the.masc garden.masc is very pretty.masc the.neu house.neu too
'The garden is very pretty. The house is (very pretty) too'

In case it turns out that speakers of Group B systematically judge (22) felicitous, and (17) infelicitous, there is further evidence that antecedent-bound pronoun dependencies are different than subject-predicative adjective dependencies in Greek. Given our assumptions so far, there are two ways to think of this difference. One is to assume that gender features are base-generated on bound pronouns, but the result of agreement on predicative adjectives. Another is to assume that gender agreement between antecedent and bound pronoun is established before Spell-Out, but gender agreement between subject and predicative adjective is established after Spell-Out. To the extend that one might have reasons to assume that agreement is not diversified in this way, we have the beginning of an argument for treating grammatical gender on bound pronouns along the lines of Dowty and Jacobson (1988).

5.7 Conclusions

It has been shown that the undergeneration problem of the presuppositional account in examples with *only* and ellipsis is not sufficient evidence to drop Generalization 2, as suggested by a treatment of the problem in terms of Feature Transmission.

(23) *Generalization 2*
Gender features on bound pronouns are always interpreted.

Gender features on bound pronouns can still be taken to always contribute in the regular meaning of the sentences that contain them, allowing us to keep a uniform treatment of bound a referential pronouns. What is needed instead is a mechanism that builds Existential F-Closures that are blind to presuppositional content. In fact, it was shown that such a mechanism is inevitable in order to account for the behavior of gender mismatches in examples with *only* and ellipsis in Greek. A deeper look in gender mismatches in ellipsis suggests that it might even be possible to strengthen the argument against Feature Transmission, and treat all instances of gender on bound pronouns, even cases of grammatical gender, in semantic terms.

Appendix

REFLEXIVES BEYOND TRANSITIVE VERBS

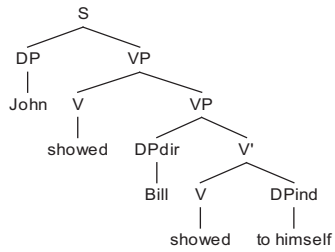
The discussion of reflexive anaphors in Chapter 3 was limited to reflexives in direct object position of transitive verbs. Accordingly, the three theories discussed there were only concerned with the defining characteristic of reflexive anaphors in that position, that they require a local c-commanding antecedent, where locality was equated with the domain of co-argumenthood. As is well known, however, reflexive anaphors can appear in other syntactic positions with different licensing conditions. In what follows I give a short overview of these issues as the arise for the semantic theory of reflexive anaphors argued for in Chapter 3.

A.1 Ditransitives

Ditransitive verbs, like *give*, *show*, etc. take two internal arguments. Ditransitives are a well-known problem for theories that treat reflexive anaphors as reflexivizing functions. To illustrate shortly, consider the example in (1) assuming a simple VP-shells syntax for ditransitives in (2). The relevant aspect of (9) here is that the verb first combines with the indirect object, before combining with the direct one. I also assume that the preposition *to* is semantically inert.

(1) John showed Bill to himself.

(2)



The most obvious problem with (1) is that there is a type-mismatch, since ditransitive

verbs are three-place predicates of type *e,eet*. To remedy this reflexives must be assumed to be ambiguous. The semantics in (3) allow *himself* to take a predicate like *show* as its argument.

(3) $[\![\text{himself}]\!] = \lambda G_{eeet,\ eet} \lambda x \lambda y.G(x)(x)(y)$

The semantics in (3) yield an interpretation for (1) according to which John showed Bill to Bill. This is indeed a possible interpretation for (1), but it is not the only one. (1) also allows an interpretation according to which John showed John to Bill. The semantics in (4) derive this reading.

(4) $[\![\text{himself}]\!] = \lambda G_{eeet,\ eet} \lambda x \lambda y.G(y)(x)(x)$

In other words, to capture the orientation of the reflexive anaphors, one needs to keep positing different meanings. The issue with this, of course, is to show that the resulting group of meanings forms a natural class. It should be explained, for example, why (4) is a natural meaning for a reflexive anaphor, but (5) is not. Using (5) in the case of (1) predicts a reading according to which Bill showed John to Bill. This reading is not possible for (1).

(4) $[\![\text{himself}]\!] = \lambda G_{eeet,\ eet} \lambda x \lambda y.G(x)(y)(x)$

For different accounts of reflexives in ditransitives that keep a treatment in terms of reflexivization, I refer to Szabolcsi (1992), Schlenker (2005), and Lechner (2006). Although the accounts of the last two authors are very different, they both decompose anaphors into a pronominal part, *him-*, and an operator part, *-self*. Since they treat *self* as a reflexivizing function, the analyses are compatible with the results of section 3.4. It is less clear whether they can replicate the results of section 3.5, so if they predict obligatory deaccenting in case Complement Prominence applies. A full comparison must await another occasion.

A.2 Domains and exempt anaphora

The lexical treatment of reflexive anaphors predicts that a reflexive anaphor and its antecedent are co-arguments. More specifically, it predicts that they are *semantic co-arguments*. This is so, since the reflexivizing function can only manipulate the arguments of a single predicate. A number of environments has been identified in

which the condition is apparently not met, and reflexive arguments are still licensed. This the case for reflexive anaphors in 'picture-DPs', in (1), as arguments of (some) prepositional phrases, in (2), as embedded subject in the complements of ECM predicates, in (3), and as part of coordinated arguments, in (4). All the examples below and in the rest of this section are drawn from Reinhart and Reuland (1993).

(1) Lucie a picture of herself.
(2) Max rolled the carpet over himself.
(3) Lucie believes herself to be smart.
(4) Max boasted that the queen invited Lucie and himself for a drink.

I will shortly discuss each of the cases in (1)-(4). Let me start with (4). Instead of trying to define a binding domain that would rule in (4) and rule out examples like, e.g., (5), Reinhart and Reuland (1993) and Pollard and Sag (1992) argue that the reflexive anaphors in (4) and (5) are subject to different licensing conditions. Although the accounts differ in important aspects, they both agree that only the reflexive in (5) is subject to purely structural conditions.

(5) * Max boasted that the queen invited himself for a drink.

The reflexive anaphor in (4), on the other hand, is a 'logophoric' (Reinhart and Reuland 1993) or 'exempt' (Pollard and Sag 1992) anaphor. Some of the characteristics of exempt anaphors is that they allow non-local or non c-commanding antecedents, they allow discourse anaphoric antecedents in the case of first-person reflexives, and allow complementarity between reflexive and pronominal anaphors. The hope for the lexical treatment of reflexive anaphors, then, is that the rest of the environments in (1) to (3) turn out to be exempt positions; i.e. that they manifest a different phenomenon.

Reinhart and Reuland argue that reflexives in 'picture-DPs' are logophoric anaphors. The status of reflexives in prepositional phrases is more difficult to determine, mostly because the class of PPs is not uniform. Consider the examples in (6).

(6) a. Max rolled the carpet over himself.
b. Max keeps a gun near himself.
c. Max speaks with himself.

Very roughly, the assessment of Büring (2005) is that the reflexives in adjunct PPs, as in (6a), or locative arguments, as in (6b), exhibit the characteristics of logophoric

anaphors. Büring points out, however, that the data are not always clear. There are numerous issues that arise in these cases that I cannot go into here. I refer to the original sources, especially Reinhart and Reuland (1993) and Büring (2005), as well as to Reuland (2001, 2011) for an updated discussion within the Reflexivity framework. The example in (6c) does not pose any major difficulty. It is standardly assumed that the reflexive is a argument of the verb, not the preposition, and that the proposition in (6c) is semantically inert. In the standard treatment of (3) according to which ECM predicates like *believe* denote relations between individuals and propositions, *herself* is not a semantic argument of *believe*. Moreover, all the authors above agree that the reflexive anaphor in (3) is not a logophoric anaphor. This has led Reinhart and Reuland (1993) to define their version of Principle A in terms of *syntactic* rather than *semantic co-arguments*. In the lexical treatment adopted here, the only possibility is that the reflexive anaphor is (at some point of the derivation) an argument of *believe*, unlike in the standard analysis.[151] This, of course, is rather a big step to take. I refer to Schlenker (2005) for discussion on this conclusion and some first attempts of implementation.

Notice that Reinhart and Reuland (1993) argue that the distinction between anaphoric and logophoric uses of reflexives is superfluous, and that their behaviour follows from their Principle A. This option is not available here since it has to be assumed that reflexive and logophoric anaphors have different semantics. More recently Reuland and Winter (2009) have proposed a decompositional semantics for reflexive anaphors that attempts to capture both anaphoric and logophoric uses, as well as the availability of proxy-readings for reflexive anaphors. Since in their analysis the *–self* part of a reflexive anaphor is a relational noun and not a reflexivizer, the account does not capture the focus data discussed here.[152]

The stress patterns of the examples above have not been examined in this

[151] But see the relevant discussion in Reuland (2011) that reaches a different conclusion. A full exposition of the two positions requires a deep dive in the syntax and semantics of ECM predicates that cannot be attempted here.

[152] Eric Reuland (p.c.) takes issue with this conclusion. He claims that there is no incompatibility between containing a relational noun and being a reflexivizer and that, in Reuland and Winter's (2009), the introduction of the binding requirement through Jacobson's (1999) z-function is "lexically triggered" by the presence of *self*. In any case, in order to capture the focus data, this analysis requires that focus on a certain element (*self*) is actually focus on another element (*the z-operator*), so that the alternatives that are triggered are alternatives to the reflexivizer rather than to the relational noun. Such an assumption will need to be very carefully constrained if it is to become part of a general theory of focus like the one adopted here.

dissertation, or, to the best of my knowledge, anywhere else. Their investigation can contribute to this discussion in various ways. Particularly, the stress pattern in cases where Complement Prominence applies can reveal the function-argument relations between the relevant elements in the examples. Consider, for example, the contrast in (7). It can be argued on the basis of (7) that *himself* does not subordinate to *to*, but to *spoke*. If it were, the nuclear pitch accent would fall on *to*, as in (7B2). (7) confirms the assumption above, then, that *himself* is an argument of *spoke* and not of the proposition. Since *himself* is the function and *spoke* its argument, the example exhibits the regular pattern in which the function subordinates to its complement.

(7) A: What did Max do?
B1: He SPOKE to himself.
B2: He spoke TO himself. #

Consider next (8). As seen in (8B2) *himself* subordinates to the proposition. Since *over* is the last element on the top grid line, it will bear the main pitch accent. It is confirmed, then, that the proposition in three-place predicates with location/ path-arguments is not semantically inert. Moreover, it has to be assumed that *himself* takes *over* as an argument, which is only possible if *over* has an articulated argument structure.

(8) A: What did Max do?
B1: He rolled the CARPET OVER himself. #
B2: He rolled the carpet OVER himself.

It is possible, then, to use evidence from Complement Prominence and the formation of prosodic feet to investigate the constituency, order of merge, and function-argument relations in the examples above, an investigation that might lead to new insights for the structure of these examples and/ or the division of labor between anaphoric and logophoric uses of reflexive anaphors.

A.3 Intensifiers

Another use of reflexive anaphors that is not covered by the current proposal is their use as adnominal intensifiers, a phenomenon that has received limited attention compared to other uses of reflexives. An example is given in (1).

(1) The queen herself cut the bread.

Eckardt (2001 and subsequent work) treats intensifiers as identity function on the domain of individuals, as in (2), that takes the subject as its argument.

(2) $[\![\text{himself}_{int}]\!] = \lambda x.\ x$

The intensifier does not contribute to the regular meaning, but its presence has consequences for the focus value of the example; it triggers alternatives to other function of type *ee*. The function in (3) is an example of such a function. (1), then, implies that the queen and not the servant cut the bread.

(3) λxιy.y is the x's servant

Notice that the semantics in (2) predict that the intensifier will always subordinate to the DP; since the DP is the argument and the intensifier the function, it is predicted that it will fall under the second clause of the Prosodic Asymmetry generalization. This is not the case; the subject always subordinates to the intensifier, as in (4).

(1) The queen herSELF cut the bread.

It hyas to be assumed, then, that the intensifier is necessarily F-marked, an observation consisted with the fact that adnominal intensifiers always trigger alternatives.

A.4 Ellipsis

Consider the example of VP-ellipsis in (1). Virtually all theories of reflexive anaphors and all theories of ellipsis licensing predict that (1) has a 'sloppy' reading, i.e. a reading in which Bob defended Bob. Theories differ considerably as to whether (1) is also predicted to have a 'strict' reading, i.e. a reading in which Bob defended John. I briefly discuss the predictions of the lexical theory of reflexive anaphors.

(1) John defended himself, and Bob did too.

Notice, first, that the lexical theory does not predict a strict reading for (1) if one adopts a strict identity condition on VP-ellipsis, as in (2).

(2) *Syntactic identity condition on VP-ellipsis*
A VP α can be elided iff there is a salient VP β whose syntactic structure is identical to that of VP α.

The only syntactic structure that conforms to an identity condition, is the one in (3). (3) predicts a sloppy reading, but not a strict one, since the meaning of the elided VP is *λx.praise(x)(x)*.

(3) $[_{TP}$ John $[_{T'}$ T $[_{VP}$ defended himself]]].
$[_{TP}$ $[_{TP}$ Bob $[_{T'}$ did ~~$[_{VP}$ defended himself]~~] too]

The only structure that could potentially license in strict reading under the lexical theory of reflexives, is the one in (4). (4) is incompatible with syntactic identity.

(3) $[_{TP}$ John $[_{T'}$ T $[_{VP}$ defended himself]]].
$[_{TP}$ $[_{TP}$ Bob $[_{T'}$ did ~~$[_{VP}$ defended John]~~] too]

The structure in (4) is also not licensed under Merchant's (2001) e-Givenness condition, adopted in Chapter 5, and repeated in (5).

(5) a. *e-Givenness*
An expression E counts as e-Given iff E has a salient antecedent A and, modulo ∃-type shifting, A entails the Existential F-Closure of E, and E entails the Existential F-Closure of A.
b. *Focus Condition on ellipsis*
An XP α can de deleted only if α is e-Given.

There is no choice of Antecedent A such that the VP is e-Given. As shown in (6), neither of the required entailments holds, if A is the VP in the antecedent sentence. If A is the TP in the antecedent sentence, then A entails the Existential F-Closure of the elided VP, as shown in (7a), bit the Existential Closure of the elided VP does not entail the Existential F-Closure of A, as shown in (7b). The strict is, thus, not licensed.

(6) a. ∃x.defended(x)(x) ~~→~~ ∃x.defended(John)(x)
b. ∃x.defended(John)(x) ~~→~~ ∃x.defended(x)(x)
(7) a. ∃x.defended(John)(John) → ∃x.defended(John)(x)
b. ∃x.defended(John)(x) ~~→~~ ∃x.defended(x)(x)

The strict reading is licensed under Rooth's Appropriate Contrast Condition in (8). This is a weaker condition than Merchant's. Simplifying a bit the Appropriate Contrast

Condition licenses ellipsis in (4), as long as the entailment in (7a) holds. The lexical theory of reflexive anaphors, then, only licenses strict readings under Rooth's Appropriate Contrast Condition

(8) *Appropriate Contrast Condition*
Ellipsis is licensed if the denotation of an antecedent constituent is contained in the focus value of a constituent containing the elided material.

The question, of course, is whether one actually should license strict readings for examples like (1). The answer to this question has turned out to be a complicated one. Reflexives have usually been considered to exhibit sloppy readings only, and, indeed, a strict reading in (1) is generally considered to be hard to get. Hestvik (1992) shows that strict readings for reflexives are acceptable in *subordinate ellipsis* such as (8).

(9) John defended himself better than Peter.

Sag (1976) claims, however, that coordinated ellipsis does license strict readings, as in (10a). Similarly, Büring (2005) reports that strict readings are licensed in (10b/c) .

(10) a. Betsy couldn't imagine herself dating Bernie, but Sandy could.
b. Bill was scared to introduce himself to Monica. Thankfully, the officer had already agreed to.
c. I could see myself having a romantic dinner with Winona Ryder, but my girlfriend couldn't.

Kehler (2002) claims that the crucial factor in licensing strict readings is the discourse relation between the antecedent and the target sentences. Strict readings are not licensed when the two sentences stand in a relation of *Resemblance*, as in (1), but they are when they stand in a *Cause-Effect* relation, as in (11).

(11) John defended himself, because his lawyer couldn't.

Although there is definitely some truth in Kehler's division of the facts, it is hard to see how the examples in (10) can be made to fit into it. Kehler himself notes that examples like (12) are easier to license a strict reading.

(12) The alleged murderer defended himself, and his lawyer did too.

In sum, I believe it is fair to conclude that the literature has not yet identified the

correct empirical generalization that governs the distribution of strict readings for reflexive anaphors. The felicity of the examples in (9), (10) and (12) suggests that the theory of VP-ellipsis should allow the licensing of strict readings, and leave additional factors to determine when those are ruled out.

A factor of particular interest that deserves further investigation is the prosodic status of the antecedent sentence. Very initial investigation suggests that strict readings in (12) are licensed (or at least significantly improved) if the reflexive is accented, as in (13).

(13) The alleged murderer defended himSELF, and his lawyer did too.

If this turns out to be a necessary condition for the licensing of strict readings, one could assume that strict readings are not licensed by the first sentence, but by some other, accommodated antecedent. The most plausible candidate for such an accommodated antecedent is, of course, the Current Question. It is natural to assume that both sentences in (13) are answers to the same Current Question. The question needs to be accommodated, but this can only be done on the basis of the first sentence; i.e. the Current Question should entail the Existential F-Closure of first sentence. A Current Question that entails the Existential F-Closure of the first sentence and can have both sentences as answers (assuming, as is usually done, that the two subject are contrastive topics) is *Who defended the alleged murdered*. Ellipsis, then, is licensed on the basis of the accommodated Current Question. It remains to be seen how this suggestion fits in a general theory of VP-ellipsis and if it can help explain the variability of strict readings observed above.

To conclude this appendix, let me point out that, at this point, there is no unified semantic treatment of reflexive anaphors that can capture all their uses mentioned in the main text and above. The simple lexical treatment argued for in Chapter 3 is no exception. Chapter 3 brought forward an empirical domain that had received little or no attention before and established what are the properties of reflexives anaphors needed to capture these facts. With this much in place it becomes possible to use data from prosody to investigate the properties of the other uses of reflexive anaphors described in this Appendix, and decide to what extent a unified treatment is possible at all.

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Samenvatting in het Nederlands

Deze dissertatie is een studie naar prosodie en anaforen. Het voornaamste doel is te kijken naar de syntaxis en de semantiek van anaforen door te kijken naar de prosodie van zinnen die reflexieve en pronominale anaforen bevatten.

Om dit te bereiken schets ik eerst een theorie over focus. De belangrijkste aanpassing in de theorie die ik voorstel is dat het focus-domein gelijkgesteld wordt aan de syntactische cyclus. Deze theorie pas ik dan toe op voorbeelden met reflexieve en pronominale anaforen. Hieruit blijkt dat de prosodische eigenschappen van reflexieve anaforen niet verklaard kunnen worden als deze worden behandeld als een element van het type *e*. De prosodie van reflexieve anaforen vereist dat i. de alternatieven voor een reflexieve anafoor met focus operaties op argumentstructuur zijn in plaats van individuen, en dat ii. reflexieve anaforen semantisch gezien functies zijn die andere functies als argument nemen. De tweede voorwaarde geldt ook voor pronominale anaforen. Dus, zowel reflexieve als pronominale anaforen zijn geen argumenten van werkwoorden zoals andere DP's dat zijn. Desondanks moeten pronominale anaforen een eigenschap delen met DP's, om hun prosodische eigenschappen goed te kunnen verklaren. Net als DP's hebben ze descriptieve inhoud. Andere descriptieve inhoud van pronominale anaforen, zoals gender, interacteert niet met focus. Dit toont aan dat focuswaarden blind zijn voor presuppositionele inhoud.

Een theorie over focus verklaart de manier waarop informatiestructuur de structuur van taaluitingen beïnvloedt. In het Engels, de taal waarop in deze dissertatie de nadruk ligt, wordt voornamelijk de prosodie van uitingen beïnvloed door informatiestructuur. Neem bijvoorbeeld de mini-gesprekjes in (1) en (2). De locatie van de klemtoon in (1B) en (2B) wordt bepaald door de manier waarop deze zinnen gelinkt zijn aan de discourse. Veranderingen in de uiting van spreker A leiden tot een ander patroon in de prosodie van de uiting van spreker B. De prosodie van (1B) is acceptabel in de context van (1A) maar niet in de context van (2A).

(1) A: John introduced Bill to Sue.
B: No, John introduced MAX to Sue.
(2) A: John introduced Max to Helen.
B: No, John introduced Max to SUE.

Dit is het resultaat van de stroom van informatie in de discourse en hoe de informatie in de verschillende delen van de uiting daarmee samenhangt. *Max* in (1) wordt geïnterpreteerd als een element met een andere informatiewaarde dan de rest van de zin, het is pragmatisch gezien prominenter. Ook prosodisch gezien is het het meest prominente element van de zin. Prosodische prominentie leidt er in het Engels toe dat het element klemtoon krijgt (In het voorbeeld weergegeven als hoofdletters).

Hieruit kunnen we dus concluderen dat een theorie over focus de prosodische eigenschappen van een uiting moet linken aan de informatiewaarde van onderdelen van die uiting; dat wil zeggen informatie uit de fonologische component aanpassen aan informatie uit de semantische component van de grammatica. Deze bewerking wordt 'bemiddeld' door syntaxis. In een model als dit moet focus gedefinieerd worden in syntactische termen. Ik neem aan dat het syntactische equivalent van focus F-markeren is. Constituenten kunnen voorzien worden van een privatief syntactisch feature F(ocus). Als dit zo is, is het doel van een theorie over focus het definiëren van regels van fonologie en interpretatie die de distributie van F-features reguleren.

Wat fonologie betreft moet de focus-theorie verklaren hoe F-features kunnen worden geïntegreerd in een algemene theorie van prosodie, en hoe F-gemarkeerde constituenten prosodische prominentie verkrijgen.

Aan de interpretatiekant moet de theorie de bijdrage van F-kenmerken aan de semantiek definiëren, en ook hoe F-gemarkeerde constituenten correleren met pragmatische prominentie. Zo goed als alle theorieën over de werking van focus binnen de semantiek van natuurlijke taal gaan uit van de intuïtie dat focus een set van alternatieven oproept. Constituenten hebben niet alleen een gewone semantische waarde, maar ook een waarde die gevoelig is voor focus, de *focuswaarde*, en die waarde is beschikbaar voor waarheidsconditionele semantiek. Deze bivalente semantiek als voornamelijk ontwikkeld om focus-gevoelige operatoren mee te lijf te gaan.

Recent zijn focus-waarden ook gebruikt om voorbeelden als (1) en (2) te verklaren, waarbij de informatiestructuur van belang is. De uitingen in (1B) en (2B) hebben dezelfde waarheidscondities, ondanks het verschil in klemtoon. Zoals gezegd, de meest basale intuitie is dat nieuwe informatie, pragmatisch gezien meer van belang dan oude informatie, samenhangt met prosodische prominentie. Ook is er in recent onderzoek geprobeerd één enkele notie te formuleren die de plaatsing van klemtoon in voorbeelden als (1) en (2) verklaard, op basis van informatiestructuur. Het basisprincipe is dat uitingen *Given* zijn, wat wil zeggen dat ze een antecedent hebben in de set van alternatieven van de uiting. Uitingen houden alleen verband met vorige uitingen door het markeren van oude en nieuw informatie door middel van

het weghalen van klemtoon. De notie van nieuwe informatie of prominentie is slechts een afgeleide daarvan. Het onderzoek dat ik doe is binnen deze lijn te plaatsen, ik veronderstel een bivalente semantiek en een uniforme aanpak van focus gebaseerd op de notie van *Givenness*.

Een aspect van de semantiek van focus dat tot nu toe weinig aandacht heeft gekregen is voor welke constituenten er een focuswaarde gemaakt moet worden, met andere woorden, welke constituenten zijn *focusdomeinen*. In het geval van focus door informatiestructuur als in (1) en (2) is het focusdomein het domein waarbinnen Givenness geëvalueerd wordt. In de literatuur is er niet veel duidelijkheid over dit aspect van focus, een paar uitzonderingen daargelaten. Ik zal aantonen dat het domein van Givenness gelijk staat aan de syntactische cyclus. Het principe dat hieraan ten grondslag ligt is (3):

(3) *Cyclische Domeinen*
De syntactische cyclus is Given.

Het aannemen van Cyclische Domeinen heeft consequenties voor een aantal aspecten van de theorie over focus, zoals de aard van het principe dat rivaliserende syntactische structuren vergelijkt, de syntaxis van F-markeren etc. In hoofdstuk 2 behandel ik alle relevante kwesties en ontwerp ik een voorstel voor een focustheorie gebaseerd op Cyclische Domeinen.

Focus-gerelateerde verschijnselen worden vaak gebruikt bij het bestuderen van de semantiek van anaforen. Meestal gaat het dan om indirecte, 'exclusieve' anaforen. De interactie van anaforen en informatiestructuur heeft veel minder aandacht gekregen, en ook alleen nog maar voor pronominale anaforen. Hoofdstuk 3 van deze dissertatie belicht het gedrag van reflexieve anaforen, zoals in (4) en (5):

(4) A: Zelda praised Max.
B: No, Zelda praised herSELF.
(5) A: What did Zelda do?
B: She PRAISED herself.

De plaatsing van klemtoon in zulke voorbeelden wordt gebruikt als testcase voor drie mogelijke theorieën over de semantiek van reflexieve anaforen. Ik laat zien dat voorbeelden als (4), waarin de anafoor focus heeft, vereisen dat de alternatieven van een reflexieve anafoor met focus operaties op de argumentstructuur zijn in plaats van individuen. Voorbeelden als (5), waarin de anafoor ondergeschikt is aan het werkwoord, vereisen dat reflexieve anaforen semantisch gezien functies zijn die andere functies als hun argument nemen. Aan deze eisen wordt voldaan als

reflexieve anaforen beschouwd worden als reflexviserende functies in plaats van als variabelen.

Hoofdstuk 4 behandelt het gedrag van gebonden en referentiële pronominale anaforen in vergelijkbare omgevingen, zoals in (6) en (7). Het feit dat er in (6) qua focus meerdere opties zijn betekent dat gebonden pronomina descriptieve inhoud hebben. Dit is al vaker beargumenteerd in de literatuur. Net zoals in het voorbeeld met de reflexieve anaforen zien we de verplichte onderschikking van het pronomen aan het werkwoord, een teken dat pronomina functies zijn die andere functies als argument nemen.

(6) A: Every actor said that Zelda praised him.
B1: No, every DIRECTOR said that Zelda praised him.
B2: No, every DIRECTOR said that Zelda praised HIM.

(7) A: What did every director say that Zelda did?
B: Every director said that Zelda PRAISED him.

Andere descriptieve inhoud van pronominale anaforen, zoals gender, interacteert niet met focus. De zin *Only Zelda went to her room* kan in andere worden geparafraseerd als “Zelda went to Zelda’s room and no one else went to his or her own room”. Echter, de gebruikelijke aanpak van genderfeatures bij pronomina en de gebruikelijke aanpak van focuswaarden (ze worden compositioneel opgebouwd) levert de interpretatie op dat Zelda naar haar kamer ging en geen enkele andere vrouwelijke persoon naar haar (eigen) kamer ging. Als we (5A) bekijken in een context waarin de set van alternatieven voor Zelda zowel mannelijke als vrouwelijke individuen bevat, zien we dat de lezing waarbij geen enkel ander vrouwelijk individu naar haar (eigen) kamer ging uitgesloten moet worden. Dit soort data laat zien dat genderfeatures op gebonden variabelen het resultaat zijn van agreement met het antecedent.

In hoofstuk 5 onderzoek ik het probleem van interpreteerbaarheid van genderfeatures bij agreement mismatches in het Grieks, zoals in (8). Ik laat zien dat de oplossing voor het probleem van *ondergeneratie* in termen van agreement onhoudbaar is. Ik zal aantonen dat dit probleem iets laat zien over focuswaarden, namelijk dat ze blind zijn voor presuppositionele inhoud.

(8) Mono to koritsi dhiakosmise to dhomatio tis.
only the.neu girl.neu decorated the room her
‘Only our girl decorated her room.’

De structuur van deze dissertatie is dus als volgt. In hoofdstuk 2 beargumenteer ik Cyclische Domeinen, en bouw ik een theorie over focus op gebaseerd op dit

principe. In hoofdstuk 3 pas ik de theorie toe op data over de prosodie van reflexieve anaforen. In hoofdstuk 4 doe ik hetzelfde voor de prosodie van pronominale anaforen. In hoofdstuk 5 beargumenteer ik dat, op basis van het gedrag van gender op pronominale anaforen, dat focuswaarden blind zijn voor presuppositionele inhoud.

Curriculum Vitae

Giorgos Spathas was born on May 8th 1980 in Thessaloniki, Greece. He received a Greek Diploma and a German Abitur at the Deutsche Schule Thessaloniki in 1998. In 2003 he received his B.A. on Philology in the University of Crete (cum laude). The same year he moved to the Netherlands. He complete the Mphil program in Linguistics (cum laude) of the University of Utrecht in 2005. His master thesis studied the interaction of Weak Crossover and clitic doubling in Modern Greek. He entered the PhD program of the Utrecht Institute of Linguistics in 2005, working on binding, anaphora, the syntax and semantics of gender features, prosody, and information structure. This study is the result of the work conducted there.