Focus on reflexive anaphors[*]

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Abstract Focus-related phenomena have long been used to draw conclusions about the syntax and semantics of anaphora. I use examples in which focus is the result of information-structural considerations to argue for a semantics of reflexive anaphors. I show that a theory that treats reflexive anaphors as reflexivizing functions is empirically superior to theories that interpret them like variables. The discussion also leads to some interesting conclusions about focus theory. It is argued that the domain of application of the relevant information-structural notion should be limited to verb phrases and sentences and that the relevant economy condition should be localized accordingly.

1   Introduction

Focus related phenomena have long been used in the investigation of anaphora. For example, the ambiguity of examples with focus-sensitive operators like *only* in (1) has been taken to confirm the view that pronouns can either be interpreted referentially or as bound variables.

(1)   Only ZELDA said that Oscar praised her.

Similarly for reflexives, it has been argued that the lack of ambiguity in (2) indicates that reflexive anaphors cannot be interpreted referentially.

(2)   Only ZELDA praised herself.

This paper investigates the distribution of stress in examples in which focus is determined by information-structural reasons, a set of examples that has received only limited attention so far.[1] The basic aim of the paper is to find out what examples of this kind reveal about the semantics of reflexive anaphors. To achieve that I compare three theories of their semantics. The data are divided into two basic sets: examples in which reflexive anaphors are obligatorily stressed, as in (3), and examples in which they obligatorily subordinate to their sister constituent, as in (4). I claim that only a theory that treats reflexive anaphors as reflexivizing functions can capture the full prosodic pattern of reflexive anaphors.

(3)   A: Oscar praised Lucie.
        B: No, ZELDA praised herSELF.

(4)   A: What did Zelda do?
        B: She PRAISED herself.

The paper is organized as follows. Section 2 presents the three theories of reflexive anaphors. Section 3 lays out the focus theory. Section 4 compares the three theories on the basis of examples whose prosody is determined by F-marking. Section 5 compares the three theories on the basis of examples in which default prosody applies. Section 6 discusses an alternative account for the data in section 5. Section 7 concludes.

2   Three theories of reflexive anaphors

Reflexive anaphors are anaphoric elements that obligatorily give rise to reflexive interpretations; i.e. interpretations in which two arguments of the same predicate receive the same value.[2] Reflexive anaphors, then, do not allow discourse anaphoric

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1 To the best of my knowledge, Jacobson (2000) is the first to note the obligatoriness of stressing the reflexive in examples like (i).
    i. Every third grade boy loves Mary, and every FOURTH grade boy loves himSELF.
Jacobson also claims that stressing the pronominal part is possible in examples like (ii). Similar data are presented in Sauerland (2008), who claims that they argue for a decompositional analysis of reflexive anaphors.
    ii. Every third grade boy loves himself, and every FOURTH grade boy loves HIMself/ *himSELF. The speakers I consulted were ambivalent about the felicity of (ii), and rejected examples like (iii). More empirical work is needed here and examples like (ii) cannot, at this point, be taken to constitute independent evidence for the necessity of decomposing reflexive anaphors.
    iii. A: Lucie praised herself.
        B: No, ZELDA praised HERself. #
2 This is true every time a reflexive anaphor is the direct object of a transitive verb, as in all the examples discussed in this paper. Famously, reflexive anaphors can be licensed in positions in which they are not co-arguments with their antecedents, as in the case of adjunct PPs and logophors. The proper

readings, as in (5), or non-local antecedents, as in (6).

(5)   Did you hear about Zelda? * Oscar praised herself.

(6)   *Zelda said that Oscar praised herself.

In this section, I present three theories of reflexive anaphors that try to capture this fact. The first two interpret reflexive anaphors like variables in predicate logic and attribute the necessity of a reflexive interpretation either to a pragmatic or a syntactic requirement. The third theory treats reflexive anaphors like reflexivizing functions; i.e. it builds the necessity of a reflexive interpretation into the semantics of the anaphor.

2.1 The pragmatic theory

Anaphors, reflexive and pronominal, are interpreted like variables in predicate logic. Their interpretation is dependent on the contextual assignment function, as in (7).

(7) $[\![herself_1]\!]^g = [\![her_1]\!]^g = g(1)$

A VP like $[_{VP}$ praised herself$_1]$, then, will have the denotation in (8), if the assignment function assigns the value Zelda to 1.

(8) $[\![[_{VP}$ praised herself$_1]]\!]^g = \lambda x.\text{praised}(\text{Zelda})(x)$

Alternatively, an anaphor can be bound. This is achieved with the insertion of a co-indexed binding operator in syntax. I assume that binding operators can freely adjoin to VPs and are interpreted with the syncategorematic rule in (9) (from Büring 2005).

(9)   *Binder Index Evaluation Rule*
       $[\![[_{VP*} \beta_n [_{VP}...]]]\!]^g = \lambda x.[\![[_{VP}...]]\!]^{g[n \to x]}(x)$

A VP like $[_{VP*} \beta_1$ praised herself$_1]$ has the denotation in (10).

(10) $[\![[_{VP*} \beta_1 [_{VP}$ praised herself$_1]]]\!]^g = \lambda x.\text{praised}(x)(x)$

The necessity of reflexive interpretations with reflexive anaphors is the result of a pragmatic requirement. Roelofsen (2008), based on Levinson (2000), proposes the

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definition of the licensing domain has been the subject of much debate. See Reinhart & Reuland 1991, 1993; Pollard & Sag 1992, and Büring 2005 for a recent overview. I abstract away from such issues here, and assume that the relevant domain is determined by co-argumenthood.

Reflexivity Convention in (11).[3]

(11)   *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 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 (11), 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.

2.2   The syntactic theory

The syntactic theory adopts the 'anaphors-as-variables' view, but argues that reflexive anaphors are designated bound variables. The necessity of reflexive interpretations is the result of a *syntactic* requirement. A syntactic principle (some version of Principle A) requires the presence of local, coindexed binding operator, as in (12). This is arguable the most common treatment of reflexive anaphors in the literature on binding theory, starting with Chomsky 1981, although details can differ considerably. See Heim & Kratzer 1998 and Büring 2005 for implementations that make use of binding operators. According to (12) $[_{VP*} \beta_1 [_{VP}$ praised herself$_1]$ is the only possible structure for a VP containing a reflexive anaphor.

(12)   *Principle A*
        Reflexive anaphors are bound by a binding operator in their local domain.

2.3   The semantic theory

The semantic theory does not interpret reflexive anaphors like variables. Instead, reflexives are given functional meanings. The binding requirement is built into the semantics of reflexive anaphors. Reflexives are functions that take two-place relations as arguments and return a property, as in (13). An analysis along these lines has been proposed by Bach & Partee (1980); Keenan (1987); Szabolcsi (1992); Lechner (2006), among others.

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3 Roelofsen does not interpret reflexive and pronominal anaphors like variables. In his system too, however, reflexive anaphors still allow both 'referential' and 'bound' construals and are elements of type *e*.

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

What the semantics in (13) does is to fill the first argument of the relation and demand that the second argument binds that first argument. Hence, the property that we end up with is necessarily reflexive. A VP like *[$_{VP}$ praised herself]*, then, ends up with the denotation in (14).

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

3   Focus theory

A focus theory is a theory of the correlation between the prosodic properties of an utterance and the information status of its parts. If so, it is a theory of the correlation between the phonology and meaning components of grammar. I assume the general architecture of Generative Grammar according to which syntactic phrase markers are spelled-out to the phonology and meaning components and receive their phonological form by rules of phonological interpretation and their meaning by rules of interpretation. The alignment of information between the phonology and meaning components, then, is mediated by syntax. I assume that the syntactic correlate of focus is F(ocus)-marking (cf. Jackendoff 1972). Syntactic phrase markers can be freely annotated with privative F-features. A focus theory, then, defines the rules of phonology and interpretation that regulate the distribution of F-features.

3.1   Rules of phonology

Rules of phonological realization affect prosodic prominence. Speakers of natural language perceive certain elements in a a sentence as acoustically more prominent than others. The corollary of prominence in English is pitch accent, indicated here with the use of capital letters. Rules of phonology, then, should explain how F-features can be integrated in a general theory of prosody assignment, and how F-marked constituents acquire prosodic prominence. For the purposes of this paper it suffices to adopt the simple rules in (15), borrowed from Büring (2008).

(15)   F-to-Accent Mapping

         a.   F-marked constituents are stronger than non-F-marked constituents.
         b.   In all other cases, apply default prosody.

3.2   Rules of interpretation

On the interpretation side, the first task is to define the relevant information-structural notions. I adopt the line taken in Rochemont 1986 and Schwarzschild 1999 according to which there is a single notion that regulates the distribution of F-marking, *Givenness*, defined in (16) (Schwarzschild 1999).

(16)   *Givenness*
       An Utterance U counts as *Given* iff it has a salient antecedent A and, modulo ∃-type shifting, A entails the Existential F-Closure of U.

(17) gives an informal procedure for building Existential F-Closures.

(17)   *Existential-F-Closure (informal)*
       a.   Raise the expression to type *t* by existentially closing unfilled arguments.
       b.   Replace F-marked constituents with variables of the same type ('presuppositional skeleton'), and existentially bind the variables.

To illustrate, consider the syntactic structures in Table 1 under the pragmatic theory of reflexive anaphors. On the phonology side, to conform to (15a), F-marked constituents are assigned pitch accents, and non-F-marked constituents are not. I will say that, e.g., *praised herself* in (T1-a) prosodically subordinates to *Zelda*. On the interpretation side, notice that the Existential F-Closure of a structure in which the reflexive is F-marked is the same, irrespective of whether the reflexive is bound or free.

Phonological form	Syntactic structure	Existential F-Closure
a. ZELDA praised herself.	$\leftarrow [_{DP}$ Zelda$_1]_F$ praised herself$_1$	$\rightarrow \exists x.\text{praised}(\text{Zelda})(x)$
b. ZELDA praised herself.	$\leftarrow [_{DP}$ Zelda$]_F \beta_1$ praised herself$_1$	$\rightarrow \exists x.\text{praised}(x)(x)$
c. ZELDA praised herSELF.	$\leftarrow [_{DP}$ Zelda$]_F \beta_1$ praised $[_{DP}$ herself $]_F$	$\rightarrow \exists x \exists y.\text{praised}(x)(y)$

Table 1

The next task is to define which constituents should meet the relevant information-structural notion. I adopt the principle in (18), although note that it will have to be revised in the course of the paper.

(18)   *Given Domains (version 1)*
       Sentences are Given

Finally, I assume, with Schwarzschild (1999), that the amount of F-marking is regulated by an economy condition. I adopt a version of Heim's (1991) Maximize

Presupposition tailored to the needs of Givenness licensing.[4]

(19) *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.

4   F-marking

This section discusses data in which prosody is determined by the first clause of
F-to-Accent Mapping, in other words cases in which the reflexive is F-marked. All
three theories correctly predict obligatory F-marking of the reflexive. They differ,
however, in predicting correctly the possibility of deaccenting the antecedent of
the reflexive anaphor. The semantic theory is the only one that makes the correct
prediction.
Consider, first, the example in (20), in which the subject and the reflexive anaphor
are both obligatorily stressed. All theories make the correct prediction in this case.

(20) A: Oscar praised Lucie.
      B1: No, ZELDA praised herself. #
      B2: No, ZELDA praised herSELF.
      B3: No, Zelda praised herSELF. #

For the pragmatic theory, the stress patterns in (20)[B1-B3] correspond to the
syntactic structures in Table 2. Out of those, only (T2-c) is Given, since Oscar praised
Lucie entails $\exists x\exists y.praised(x)(y)$, but not $\exists x.praised(Zelda)(x)$, $\exists x.praised(x)(x)$, or
$\exists x.praised(x)(Zelda)$. (T2-c) corresponds to (20)[B2], so the theory makes the right
prediction. The syntactic theory only differs in that it does not generate the syntactic
structure in (T2-a) , so it makes the correct prediction as well.

Syntactic structure	Existential F-Closure	Given
a. $[_{DP}$ Zelda$_1]_F$ praised herself$_1$	$\exists x.praised(Zelda)(x)$	*
b. $[_{DP}$ Zelda$]_F\beta_1$ praised herself$_1$	$\exists x.praised(x)(x)$	✓
c. $[_{DP}$ Zelda$]_F$praised $[_{DP}$ herSELF $]_F$	$\exists x\exists y.praised(x)(y)$	*
d. Zelda praised $[_{DP}$ herSELF $]_F$	$\exists x.praised(x)(Zelda)$	*

Table 2

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4 Other authors that have used Maximize Presupposition in the domain of focus include Wagner (2005);
Sauerland (2005), and Kucerova (2007).

The semantic theory generates very different Existential F-Closures in case the reflexive is focused. The reflexive is not an individual of type *e*, but a function of type $\langle\langle e, et\rangle, et\rangle$. To evaluate Givenness for the structures in Table (T3-b) and (T3-c), then, one needs to think what are other possible functions of this type.

Syntactic structure	Existential F-Closure	Given
a. $[_{DP}$ Zelda$]_F$ praised herself	$\exists x.\text{praised}(x)(x)$	*
b. $[_{DP}$ Zelda$]_F$ praised $[_{DP}$ herSELF $]_F$	$\exists Q_{\langle\langle e, et\rangle, et\rangle}.\exists x.Q\text{-praised}(x)$	✓
c. Zelda praised $[_{DP}$ herSELF $]_F$	$\exists Q_{\langle\langle e, et\rangle, et\rangle}.Q\text{-praised}(\text{Zelda})$	*

Table 3

A prime candidate is passivization. Assume that passivization is the result of applying an abstract morpheme PASS (with the familiar syntactic correlates) on the verb. The meaning of PASS is given in (21), a function that turns a relation into a property by saturating its external argument. (T3-b), then, is Given since *Oscar praised Lucie* entails $\exists Q_{\langle\langle e, et\rangle, et\rangle}\exists x.Q\text{-praised}(x)$ (for $Q = $ PASS), but not $\exists Q_{\langle\langle e, et\rangle, et\rangle}.Q\text{-praised}(\text{Zelda})$. If so, (T3-b) is the only candidate that is Given, and the semantic theory makes the correct prediction. [5]

(21) $[\![\text{PASS}]\!] = \lambda R \lambda x \exists y.R(x)(y)$

Let me now turn to an example that distinguishes between the three theories. As in (20), focus on the reflexive is obligatory in (22), as well. This time, however, it is also possible to leave the subject without any F-marking.

(22)   A: Oscar praised Zelda.
        B1: No, ZELDA praised herself.   #
        B2: No, ZELDA praised herSELF.
        B3: No, Zelda praised herSELF.   ?

The pragmatic and syntactic theories do not predict the availability of (22)[B3]. Consider, first, the pragmatic theory in Table 4. Candidates (T4-a) and (T4-c) are both Given; *Oscar praised Zelda* entails $\exists x.\text{praised}(\text{Zelda})(x)$ and $\exists x \exists y.\text{praised}(x)(y)$.

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[5] Passivization is not the only function of this type that has to be considered in the semantic theory. The detransitivization function $\lambda R \lambda y \exists x.R(x)(y)$ licenses Givenness in example (i). This function has been used in the domain of possessives and relational nouns. See Barker 2008 for discussion and overview.

   i. A: Zelda praised Oscar.

       B: No, Zelda praised herSELF.

Since the former asymmetrically entails the latter, Maximize Focus Presupposition (MFP) chooses (T4-a) over (T4-c). Crucially, (T4-d), which corresponds to (22)[B3] is not even Given, since *Oscar praised Zelda* does not entail $\exists x.praised(x)(Zelda)$.The pragmatic theory, then, predicts (22)[B1] to be the only possible prosodic pattern in (22).

Syntactic structure	Existential F-Closure	Given	MFP
a. $[_{DP} \text{Zelda}]_F$ praised herself$_1$	$\exists x.praised(Zelda)(x)$	✓	←
b. $[_{DP} \text{Zelda}]_F$ β_1 praised herself$_1$	$\exists x.praised(x)(x)$	*	
c. $[_{DP} \text{Zelda}]_F$ praised $[_{DP} \text{herSELF}]_F$	$\exists x \exists y.praised(x)(y)$	✓	
d. Zelda praised $[_{DP} \text{herSELF}]_F$	$\exists x.praised(x)(Zelda)$	*	

Table 4

Table 4 can also be used to evaluate the syntactic theory. The syntactic theory generates the structures in (T4-b,d). Out of those only (T4-c) is Given. This is a good result since (22)[B2] is actually felicitous. The theory, however, fails to license (22)[B3], since (T4-d) is not Given.

Consider, finally, the semantic theory in Table 5. The structures in both (T5-b) and (T5-c) are Given; *Oscar praised Lucie* entails $\exists Q_{\langle\langle e,et\rangle,et\rangle} \exists x.Q\text{-}praised(x)$ and $\exists Q_{\langle\langle e,et\rangle,et\rangle}.Q\text{-}praised(Zelda)$, for $Q = \text{PASS}$. These are the two candidates that are licensed and they correspond to (22)[B2] and (22)[B3], as desired.

Syntactic structure	Existential F-Closure	Given	MFP
a. $[_{DP} \text{Zelda}]_F$ praised herself	$\exists x.praised(x)(x)$	*	
b. $[_{DP} \text{Zelda}]_F$ praised $[_{DP} \text{herSELF}]_F$	$\exists Q_{\langle\langle e,et\rangle,et\rangle}.\exists x.Q\text{-}praised(x)$	✓	
c. Zelda praised $[_{DP} \text{herSELF}]_F$	$\exists Q_{\langle\langle e,et\rangle,et\rangle}.Q\text{-}praised(Zelda)$	✓	←

Table 5

A further issue arises, however, because MFP favors (T5-c) over (T5-b); $\exists Q_{\langle\langle e,et\rangle,et\rangle}.Q\text{-}praised (Zelda)$ asymmetrically entails $\exists Q_{\langle\langle e,et\rangle,et\rangle} \exists x.Q\text{-}praised(x)$. Let me first point out that the prediction of the semantic theory is confirmed in examples that do not differ from (22) in terms of Givenness licensing, as in (23) and (24).

(23)   A: Zelda was praised.
      B1: No, ZELDA praised herself.   #
      B2: No, ZELDA praised herSELF.   #
      B3: No, Zelda praised herSELF.

(24)   A: Who praised Zelda?
      B1: ZELDA praised herself.   #

    B2: ZELDA praised herSELF.   ??
    B3: Zelda praised herSELF.

The question that arises is why the economy condition can be obviated in (22). In Spathas 2010 I present several cases in which economy violations are tolerated in order to satisfy pragmatic requirements and constraints on felicitous discourse. I propose there that there is a strong preference that an utterance and its antecedent for Givenness licensing can both be answers to the same Current Question, a preference that is not met by the choice of (T5-c), but is by the choice of (T5-b). A full exposition of this idea and the data that support it is beyond the scope of this paper. I refer to Spathas 2010 for further details.

  It has been shown in this section that the semantic theory is the only one that correctly predicts all the possible prosodic patterns in examples whose prosody is determined by F- marking. The investigation of default prosody in the next section leads to the same conclusion.

5 Default prosody

This section discusses the prosody of constituents in which default prosody applies. It is argued that the semantic theory is the only one that explains the fact that reflexive anaphors always prosodically subordinate to the verb.

5.1 Prosodic Asymmetry

Default prosody can be taken to apply in all constituents that include no F-marked material. Such cases include both constituents whose elements are all new, and constituents whose elements are all Given. Take the example in (25). The minimal F-marking that is required for the sentence to be Given is shown in (26). By (15a), the VP will have to be more prominent than the subject. The question, then, is what determines the prosody inside the VP. It can be seen in (25) that there are two possibilities, one in which only *Zelda* bears a pitch accent, and one in which both *praised* and *Zelda* bear pitch accents.

(25) A: What did Lucie do?
    B1: She praised ZELDA.
    B2: She PRAISED ZELDA.

(26) She [$_{VP}$ praised Zelda]$_F$

The VP in example (27) is a case of a constituent whose elements are all Given. The only F-marking that is required for the sentence to be Given is that on the subject, as in (28). The question, then, is what determines the prosody inside the VP. It can

be seen in (27) that there are two possibilities, one in which *praised* prosodically subordinates to *Zelda*, and one in which the verb and its object are prosodically on a par.[6]

(27)   A: Lucie praised Zelda.
            B1: No, MAX praised ZELDA.
            B2: No, MAX PRAISED ZELDA.

(28) $[_{DP}$ Max$]_F$ $[_{VP}$ praised Zelda].

The VPs in (26) and (28) share the same prosody, default prosody. Default prosody is assumed to be the result of structural considerations. Most authors (e.g. Gussenhoven (1983); Selkirk (1984); Rochemont (1986), among many others) argue that the generalization is that arguments are more prominent than predicates. In a detailed investigation of the relevant facts, Wagner (2005) makes a somewhat different assessment. His Prosodic Asymmetry generalization in (29) factors in considerations of order; default prosody differs in *predicate argument* and *argument predicate* sequences.

(29)   *Prosodic Asymmetry*
         a.   When a functor A precedes its complement B, the functor may be on a par or maybe be prosodically subordinated to the argument. FUNCTOR ARGUMENT / Functor ARGUMENT
         b.   When a functor A follows its complement B, the functor is prosodically subordinated to the argument. ARGUMENT Functor

In the VPs in (26) and (28), *praised* is the functor and *Zelda* is the argument. Their prosody falls under (29a) giving rise to the two stress patterns in (25) / (27)[B1] and (25) / (27)[B2].

5.2   Prosodic Asymmetry and reflexive anaphors

The prosody of VPs with reflexive anaphors in examples in which default prosody applies, is only compatible with the semantic theory of reflexive anaphors. Consider the stress pattern of examples (30) and (32), which are parallel to (25)and (27), respectively. In both cases, the reflexive anaphor obligatorily subordinates to the predicate.

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6 As Michael Rochemont (p.c.) points out, relative prominence in embedded domains such as (27)[B] is not indicated through pitch accents, but has different acoustic correlates. The small capital letters in, e.g., (27)[B], then, should be taken to indicate relative prominence rather than accent.

(30)   A: What did Zelda do?
       B1: She PRAISED herself.
       B2: She PRAISED herSELF. #
       B3: She praised herSELF. #

(31)   Zelda [$_{VP}$ praised herself]$_F$

(32)   A: Lucie praised herself.
       B1: No, ZELDA PRAISED herself.
       B2: No, ZELDA PRAISED herSELF. #
       B3: No, ZELDA praised herSELF. #

(33)   [$_{DP}$Zelda]$_F$ [$_{VP}$ praised herself]

The syntactic and pragmatic theories do not predict the attested pattern. In both theories reflexive anaphors denote individuals of type *e* that are arguments of the predicate *praised*. Since the order is *predicate argument*, the prosody of the VPs is expected to fall under (29a). In other words it is expected to be no different than the prosody of the VPs in (25) and (27). The patterns in (30) / (32)[B2] and (30) / (32)[B3], however, are infelicitous. In the semantic theory, the function-argument relation is reversed; *herself* is the functor and *praised* its argument. Moreover, the order is *argument function*. The prosody of the VPs, then, is expected to fall under (29b); *herself*, the functor, should subordinate to *praised*, the argument. This is exactly the attested pattern.

6   Embedded domains

This section discusses a possible alternative account of the data in section 5.2 that retains the reflexives-as-variables view. The account is shown to fail. The discussion leads to some necessary changes in the focus theory of section 3, particularly in the definition of Given Domains.

6.1   Inherent Givenness

The account of the default prosody data I consider in this section is based on the intuition that reflexives always deaccent, because they are anaphors. In some sense, then, they are always Given.

   The first thing to note is that such an alternative requires Givenness to be checked for individual constituents. It is thus not compatible with a definition of Given Domains that only requires sentences to be Given, as I have been assuming so far. This is not problematic. In fact, it is known already that Given Domains in (18) is not enough to capture all the facts, and constituents smaller than sentences have to

be checked for Givenness independently. Consider, e.g., the example in (34). The minimal F-marking that is needed for the sentence to be Given is the one in (35). The structure in (35) predicts that default prosody determines the prosody of the VP. The patterns in (34)[B2] and (34)[B3], however, are infelicitous.

(34)   A: I asked Max to criticize Zelda. What did Lucie do?
        B1: She PRAISED Zelda.
        B2: She praised ZELDA.   #
        B3: She PRAISED ZELDA.   #

(35)   She [$_{VP}$ praised Zelda]$_F$

It is required, then, that Given Domains is revised. One possibility is to adopt Schwarzschild's (1999) original definition in (36). (36) requires that all constituents are checked for Givenness.

(36)   *Given Domains (version 2)*
        If a constituent is not F-marked, it must be Given.

To apply the revised Given Domains in (36), Givenness must be extended to cover elements of type *e*. Schwarzschild (1999) adds the clause in (37).

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

Applying the revised Given Domains in example (34) predicts the syntactic structure in (38); *Zelda* is not F-marked, because it is Given, *praised* is F-marked, since it is not Given, the VP is F-marked for the sentence to be Given. The prosody of the VP is determined not by default prosody, but by (15a). It is correctly predicted, then, that *Zelda* will subordinate to *praised*.

(38)   She [$_{VP}$ [$_{VP}$ praised]$_F$ Zelda]$_F$

Similarly, the alternative considered here claims that examples like (30) have a structure similar to the one in (38). Since, *herself* is an anaphor and, hence, Given, and *praised* is not Given, the structure of (30)[B] is the one in (39). The prosody of the VP, then, is not determined by structural considerations but by (15a), that forces herself to subordinate to praised.

(39)   She [$_{VP}$ [$_V$ praised]$_F$ herself]$_F$

For *herself* to be Given, (37) requires that it is coreferent with some antecedent in the discourse. To check (37) it has to be assumed that *herself* is referential.

Referential construals are allowed only by the pragmatic theory. Reflexives bound by quantification antecedents, however, are also obligatorily subordinated to the predicate. This is shown in (40). The definition of Givenness for elements of type e should be revised so that bound reflexive anaphors also turn out to be obligatorily Given.[7]

(40)   A: What did every actress do?
         B1: Every actress PRAISED herself.
         B2: Every actress PRAISED herSELF.   #
         B3: Every actress praised herSELF.   #

Even if this is achieved, the alternative faces two problems. The first problem is that it cannot be extended to examples like (32). Notice that the alternative worked for (30), because the revised Given Domains predicted an asymmetry in F-marking between the reflexive and the predicate; since the reflexive is Given and the predicate is not, only the latter is F-marked and the prosody of the VP falls under (15a). In the case of (32), however, the predicate is also Given. The structure of (32)[B] is predicted to be the one in (41). Neither the verb nor the anaphor are F-marked, so default prosody is predicted to apply. Default prosody under the 'reflexives-as-variables' view predicts that the prosody of the VP falls under (15a). This is the wrong result.

(41) $[_{DP}$ Zelda$]_F$ $[_{VP}$ praised herself$]$

The second problem is that the analysis predicts reflexive anaphors to behave like any other Given element of type e. This is not the case. Consider the example in (42). The revised Given Domains requires that *praised* is F-marked, but *Zelda* is not. The structure of (42)[B] in (43), then, is exactly parallel to that of (30)[B] in (39). The prosodic patterns of the utterances, however, are different. Whereas

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7 A possibility that comes to mind is to use Heim's (2008) definition of *covaluation* in (i). Givenness for elements of type e, then, should be defined as in (ii). Assuming, further, that the syntax of binding requires the presence of a coindexed trace (cf. Heim & Kratzer 1998), as in (iii), the bound reflexive will always be Given since it is covalued with the trace.

    i. 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 $g_c \subseteq g$.

    ii. Givenness (addition) An Utterance U counts as *Given* iff it has a salient antecedent A and, if U is of type e, A and U are covalued.

    iii. Every actress β_1 t_1 praised herself$_1$.

herself obligatorily subordinates, *Zelda* in (42) cannot. The pattern in (42)[B1] is considered marked and improves only if one builds the discourse in a way that one can accommodate the question *What did Zelda's father do to Zelda?*. On the contrary, subordination of *herself* is the most natural option and requires no accommodation or extra discourse. Moreover, the stress pattern that correspond to default prosody in (42)[B2] and (42)[B3] are the natural patterns. These patterns are not predicted by the revised Given Domains.

(42)   A: What did Zelda's father do?
        B1: He PRAISED Zelda.   ??
        B2: He praised ZELDA.
        B3: He PRAISED ZELDA.

(43)   He $[_{VP}$ $[_V$ praised$]_F$ Zelda$]_F$

This section attempted to build an alternative account of the default prosody facts in section 5.2 that keeps interpreting reflexive anaphors like variables. The account was shown to fail in two respects. First, it fails to generalize to all the cases in which reflexive anaphors obligatorily subordinate. Second, it makes the wrong prediction that reflexive anaphors and other Given elements of type *e* will show the same pattern. Example (42) showed that this is not the case. Moreover, example (42) is incompatible with one of the basic building blocks of the alternative, the revised Given Domains.

6.2   Given Domains, take three

In this section I argue for a revision of Given Domains that only requires VPs and sentences to be Given. The revised principle has consequences for the application of the economy principle.
What example (42) indicates is that Givenness is checked for the VP, and not for the individual constituents within it. If so, the syntactic structure of (42)[B] is the one in (44). Since neither *praised* nor *Zelda* are F-marked, default prosody applies, giving rise to the pattern (42)[B2/3] .

(44)   He $[_{VP}$ praised Zelda$]_F$

To achieve this result I propose to revise Given Domains as in (45).[8,9]

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(45)   *Given Domains (version 3)*
          Sentences and VPs must be Given.

The revised Given Domains in (45) readily explains the difference between examples (30) and (42), as long as one adopts the semantic theory of reflexive anaphors. The syntactic structure of (30) is the one in (46). This is exactly parallel to the one (44), in that default prosody applies within the VP. As described in section 5.2, the result of default prosody in the case of (46) is different than in (44), since the predicate-argument relations are different.

(46)   Zelda [$_{VP}$ praised herself]$_F$

Example (34) appears to be problematic for (45). Both syntactic structures in Table 6 satisfy (45). Moreover, Maximize Focus Presupposition cannot distinguish between the two since their Existential F-Closures symmetrically entail each other.

Syntactic structure	Existential F-Closure	Given	MFP
a. She [$_{VP}$ praised Zelda] $_F$	$\exists P_{et}.P(\text{Lucie})$	✓	←
b. She [$_{VP}$ [$_V$ praised]$_F$ Zelda]$_F$	$\exists P_{et}.P(\text{Lucie})$	✓	←

Table 6

To rule out the structure in (T6-a) I propose to localize the application of the economy principle. If economy is evaluated at the VP level [$_{VP}$ praised Zelda]$_F$ is blocked since its Existential F-Closure, $\exists P_{et}\exists x.P(x)$, is asymmetrically entailed by the Existential F-Closure of [$_{VP}$ [$_V$ praised]$_F$ Zelda]$_F$, $\exists R_{\langle e\langle e,t\rangle\rangle}\exists x.R(\text{Zelda})(x)$.

In Spathas 2010 I develop a focus theory based on (45) and local economy. I achieve that by modifying Wagner's (2005) recursive system of prosody assignment and identifying domains of Givenness with cyclic domains in that system.

7 Conclusions

It has been shown that the semantic theory of reflexive anaphors is empirically superior to theories that interpret them like variables. The empirical domain I used contained examples in which focus is determined by information-structural reasons. Examples whose prosody is determined by F-marking require that the alternatives to a focused reflexive anaphor are other argument structure operations rather than individuals. Examples that exhibit default prosody require that reflexive anaphors are functions that take two-place relations as arguments. Both requirements are met by a semantic theory of reflexive anaphors that treats them as reflexivizing functions, as in (47). Neither of the requirements is met by the theories that interpret reflexive anaphors like variables.

(47)   ⟦himself⟧ $= \lambda R \lambda x. R(x)(x)$

Moreover, examples in which the prosody of reflexive anaphors is different than that of Given DPs has revealed that the domains of application of Givenness should be limited to sentences and VPs as in (48) and that the relevant economy condition should be localized accordingly.

(48)   *Given Domains (version 3)*
         Sentences and VPs must be Given.

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