Optimal reflexivity in Dutch

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1. Introduction: Optimality in semantics.

The view that natural languages are adaptive, biologically based systems for efficient and economical communication of information sheds new light on the issues of the semantics of natural languages and opens up an interesting path towards novel explanatory insights into the structural processes of human communication. The central thesis of linguistic economy considers information to be a negotiable commodity, where the producer is maximizing profits by restricting resources, such as time, articulatory effort and attention, and the consumer is seeking to maximize his understanding by updating his information state extracting all information from what is said, while minimizing his cognitive effort and economizing on processing cost. Producer and consumer often may have conflicting interests within an overarching common concern to cooperate in sharing information. The producer serves his interest, for instance, in expressing his thought in a way that he expects to fit in with what he thinks the consumer already believes, and in minimizing the time needed to express it, i.e. preferring fewer and shorter words. The consumer will serve his interests if he maximizes binding of definite expressions like anaphora or definite descriptions, accommodating presuppositions where necessary, and in getting as much out of the
locutionary act as his information state permits him, while maintaining cohesion. The agenda for semantic theory, so reconceived, consists now in sorting out what constraints govern the actions of both producer and consumer, which different currencies may play a role, how conflicts of interests may arise, as well as what strategies may be used to cooperatively resolve the conflicts. Of course, the syntactic phrase structure rules and compositional semantic rules still play their own role in grammar as hard, inviolable constraints, whose exceptions result in (degrees of) ungrammaticality or semantic uninterpretability. Binding principles provide the point of departure for the account of Dutch reflexives offered in this paper, but optimality considerations are needed in addition as principle of linguistic economy to account for differences in reflexivization strategies of Dutch and English. Against this generalized pragmatics background, where optimizing use of the language in different circumstances is at stake and processing considerations enter into consideration, this paper outlines an OT account of the semantics of the two Dutch reflexive pronouns: the short form *zich*, glossed as SE, and the morphologically complex *zichzelf*, glossed as SELF. From Burzio (1997?) I adopt the referential economy hierarchy, assuming that reflexives have no descriptive semantic content, pronouns have some, and other referring expressions have full referential content. Linguistic economy demands minimizing processing load for the consumer of the information, while maximizing ease of expression for the producer. Reflexives that only take impersonal or third person singular or plural antecedents in Dutch support Burzio’s view that their lack of agreement features makes them match best with local impersonal antecedents, or the weakened feature structure of local third person antecedents. They are contrasted to the first and second person NPs that additionally have richer, partly contextually determined features and bind case-, gender- and number-sensitive compound reflexives, consisting of the corresponding pronoun and the bound morpheme
I will argue, contrary to Burzio, however, that SE-reflexives in Dutch provide a maximally economical strategy for local binding, optimally encoding coreference in comparison to the English counterparts with ordinary bound pronouns. Burzio’s stated general dispreference for SE-reflexives is consequently dismissed and replaced by a preference based on economy considerations for SE-reflexivization.

2. The economy of reflexivization

Linguistic economy leads us to expect that whenever lexically extensional substitution *salva veritate* is observed in a construction, there must be another context where the two expressions do make a different contribution to the content of the sentence. This meaningful difference could well be located in the discourse relations of the sentence, i.e. in the way its content is merged with the context created by preceding discourse, or in the way either the producer may continue or the consumer react to it. Context-independent true synonymy, as strongly intensional substitution in any context not only *salva veritate*, but also preserving content and context change potential, is inefficient and uneconomical. Then why does Dutch, unlike English, need two reflexive pronouns?

1) Jan scheert *zich*. 2) Jan scheert *zichzelf*.

John shaves SE. John shaves SELF.

John shaves. John shaves himself.

In (1) and (2) prima facie, no truthconditional difference can be detected between the two sentences in isolation, so *zich* and *zichzelf* could be considered synonymous expressions in Dutch in this context, both lacking case, number and gender agreement features. But there is a hidden, perhaps to a certain extent culturally determined, assumption at play here, for this observation is correct only when John is the agent of the predicate. In (1), both Dutch
and English, the identity of the shaver could, but need not be John. In (2), however, John must be the shaver, and *zichzelf* is a full-fledged argument of the predicate, assigning it thematic role PATIENS. If someone other than John shaves John, (1) is still true, but (2) is not, but (2) entails (1). It is sometimes considered to be the focus meaning of *zichzelf*, expressing that John was the only one of all people who could possibly shave John. The -self morpheme in Dutch combines with the short form *zich* to yield an internal argument of the predicate, to be interpreted as a generalized quantifier, denoting a maximal filter stating identity of the internal and external argument. In English the morpheme -self combines with the ordinary, case sensitive pronoun to form a reflexive. In Dutch quantificational adverbs, in Spec of VP, may modify such predications, as in (3a), showing how *zelf* remains in situ within the VP, while *zich* is cliticized in I-projection.

3) a. Jan scheert zich [VP nooit zelf].
   b. John shaves SE [VP never SELF].

This indicates the first important difference between Dutch and English reflexivization strategies. In (3a) Dutch uses the short form reflexive *zich*, economizing on agreement features and overt expression of the agent argument, to form a reflexive predicate, encoding that *zelf* must be identified with the external argument *Jan* in Spec of IP and still carrying the PATIENT role, as it is raised from internal argument to the external position. English must resort in (4a) to a less economical paraphrase of (3a), overtly expressing the existentially quantified shaver argument, using an ordinary, case sensitive, bound pronoun in a light verb ECM construction with a bare infinitival complement.

4) a. John always has someone (else) shave him.
   b. John never has himself shave him.
Resolving bound pronouns is relatively more costly for a consumer of information, as it requires calls to available referents stored in memory, exploits lexical information, as well as perceptual sources in the situation of use and common sense. Of course, *him* in (4a) could always be interpreted deictically or otherwise bound by an antecedent in prior discourse, an ambiguity the Dutch (3a) lacks. Alternatively, (4a) could be paraphrased, less naturally, by its dual (4b). In any case, situations in which (3a) and (4a, b) are true, (5a) must be false.

5) a. John never shaves.

In Dutch there is also a less economical, marked way of expressing (3a), which may overtly refer to the shaver role in an optional PP, as in passives, using a light verb with a non-finite complement in (3c). The lack of agreement features that require checking by the verbal predicate allow both *zich* and *zichzelf* to raise to subject of a non-finite complement of a light verb, as in (3c), and to corefer with the subject of the main IP.

3) c. Jan laat zich(zelf) (altijd) ([PP door een ander]) scheren.

   d. John lets SE/SELF (always) ([PP by someone else]) shave.

When the shaving agent is overtly expressed, (3c) can be continued with a simple pronoun coreferring with it, as in (6a,b).


   b. He pays him ten dollars.

   c. Hij betaalt de barbier tien dollar.

   d. He pays the barber ten dollars.

When the shaver argument is implicit as in (3a) or (3c) without PP, a definite description *de barbier/ the barber* must be used to express the coreference with the shaver and establish reference to him, as in (6c, d). Universally, pronouns require overtly asserted antecedents,
but definite descriptions allow accommodated antecedents to be interpreted as coreferential with indefinites inferred from implicit arguments in prior discourse.4

3. Further properties of SE reflexives.

SE reflexives, like clitics, do not constitute acceptable short answers to wh-questions (7), cannot be fronted in wh-questions (8), nor carry high pitch accents marking focus or nuclear scope (9), nor admit of topicalization (10), nor coordinate with syntactic arguments of verbs (11).

   b. Who shaves John? *SE/SELF
   c. Who does John shave? Himself.

8) a. Jan laat Peter zich scheren. *Wie laat Jan Peter t scheren?
   b. John let Peter SE shave. *Who let John Peter t shave?
   c. John let Peter shave. Who does John let Peter shave?

9) a. Als Jan *ZICH/ZICHZELF scheert, dan mag hij naar het feest.
   b. If John *SE/SELF shaves, then he may go to the party.
   c. If John shaves himself, he may go to the party.

    b. *SE/SELF has John t shaved well.
    c. Himself John has shaven t well.

11) a. Jan scheerde *zich/zichzelf en Piet.
    b. John shaved *SE/SELF and Peter.
    c. John shaved himself and Peter.
In all of the contexts (7)-(11) the SELF reflexive is perfectly acceptable, supporting the claim above that it is a full-fledged argument of a predicate, in spite of its lack of agreement features.

If the verbal predicate describes an unvoluntary, internal bodily action (12), or an emotional property denoted by intransitive verbs (13), only SE reflexives are acceptable, and SELF reflexives are not. This class of predicates is included in what Reuland and Reinhart (1993) call ‘inherent reflexive predicates’.

12)  a. Jan verslikte zich/*zichzelf/*Marie
    b. John ver-swallow-ed SE/*SELF/*Mary
    c. John choked (IV)

13)  a. Jan schaamt zich/*zichzelf/*Marie
    John shames SE/*SELF/*Mary
    John is ashamed (of himself)
    b. Jan haat *zich/zichzelf/Marie
    John hate *SE/SELF/Mary
    John hates himself/Mary
    c. Jan verbaasde zich/zichzelf/Marie
    John surprised SE/SELF/Mary
    John surprised himself/Mary.

As final point in this description of the differences between SE- and SELF-reflexives, it should be noted that the famous Russellian self-referential paradox arises only with SELF-reflexives, when we assume in addition that the definite description referring to the barber picks a unique individual, excluding an inverse scope interpretation of the barber as dependent definite NP. A SE-reflexive in the same context creates an outright contradiction
in (14a), for the statement would only be true just in case the unique barber shaves everyone, including the barber himself, who neither shaves himself nor is shaven by anyone other than himself. This appeals to the fact that *zich scheren* does not assign agent to external arguments, as discussed above, hence *zich niet scheren* is true only of those who noone shaves, i.e. men with a beard. Accordingly, (14a) constitutes a contradiction, in English expressed without internal argument.

14) a. De kapper scheert iedereen die zich niet scheert.

   b. The barber shaves everyone who SE not shaves.

   c. The barber shaves everyone who does not shave.

In (15a) the SELF-reflexive creates an internal argument in the restrictive relative clause of the quantifier, that binds it and is itself the internal argument of the main transitive predicate.

15) a. De kapper scheert iedereen die zichzelf niet scheert.

   b. The barber shaves everyone who SELF not shaves.

   c. The barber shaves everyone who does not shave himself.

The paradox arises in attempting to answer the question whether the barber shaves himself, assuming that (15) is true and there is only one barber. For if he does shave himself, then he is excluded from the domain of non-self-shavers, but they are just the ones that get shaven by that unique barber: contradiction! And if the barber does not shave himself, then he must be included in that domain and hence get shaven by himself after all: contradiction again!

Although (15a) is perfectly grammatical and even interpretable, it can neither be verified nor falsified for the barber, who must be included in any case in the domain of any model for (15). Dutch speakers often prefer a passive construction over (15a), as in (16).

16) a. Iedereen die zichzelf niet scheert wordt geschoren door de barbier.
b. Everyone who SELF not shaves is shaven by the barber.

c. Everyone who does not shave himself is shaven by the barber.

The interpretation of (16) easily allows for a dependent definite, referring to several different barbers, dependent upon the choice on non-self-shaver. Under that interpretation, (16) does not create a paradox, for one barber may shave another one, getting everyone shaven in the domain and yet having no barber shave himself. An insightful explanation of the semantics of self-referential constructions with the two Dutch reflexives, to my knowledge not yet addressed in the logical literature on self-reference and truthfunctional paradoxes, must be deferred to another occasion.

4. Referential economy: towards an OT analysis

Burzio’s referential hierarchy alluded to above considers reflexives easiest to process, as they are most economical, only requiring a call to local memory for the referent of the subject. Pronouns may be interpreted deictically, requiring a call to the situation of use, or anaphorically, calling to memory to available, possibly non-local antecedents, stored by the interpretation of preceding discourse. Proper names refer independently in any context, so they introduce a new referent at their first use and corefer with it at each subsequent use, regardless of the level of information structure. If co-arguments of a verbal predicate are not marked for coreference by reflexives, they should be interpreted as disjoint in reference. It is always possible that ignorance or intention to mislead on the part of the speaker makes him fail to encode the coreference of two co-arguments, even though in fact they do corefer. In other words, the interpreter should always allow for the possibility that his source, the speaker, may not have perfect information, and hence cannot be blamed for failing to encode coreference, even though two co-arguments do corefer in a model. Consumers of information
should always be on the alert for a possible discrepancy between what the source of their information wants them to believe is true and what in fact is true, even if their sources do not intend to be lying. Ignorance is more often the parent of misunderstanding than the intention to mislead.

For present purposes, however, we are interested in analyzing what information a speaker conveys by his assertions - how he shares his beliefs and thoughts by encoding them in expressions with that information content. Technically, variable assignment functions pick referents of pronouns in a domain of model, given a circumstance. In determining what constraints play a role in this process, the given assignment, fixing the value of free variables, is regarded it as arbitrary, implicitly looking at any such given assignment in a model. Subsequently evaluating the shared content in a model for its truth value is another level of information processing that is outside our consideration.

Given these assumptions, consider the data in (17)-(19).

17)  
   a. De barbier\(_i\) knipte Jan\(_j\).  
   b. The barber cut (3PS past) John.  
   c. The barber cut John.

18)  
   a. Jan\(_i\) werd geknipt (door de barbier\(_i\)).  
   b. John was cut (by the barber).  
   c. John was cut (by the barber).

19)  
   a. Jan\(_i\) liet zich\(_k\) knippen (door de barbier\(_i\)).  
   b. John let SE cut by the barber.  
   c. John let himself get cut by the barber.

In (17) the two definite co-arguments of the predicate are interpreted as disjoint in reference (i\(\sim\)j). The same holds for the passive of (17) in (18), but it may economize on the agent
argument by suppressing the PP. The marked construction with the light verb *let* in (19) is on the one hand less economical than (17) and (18) in using two, instead of one predicate. On the other hand, the light verb in (19) assigns control of the subject over the situation described in its non-finite complement, while coreferring with its non-agentive argument. The SE reflexive in (19) is raised to subject of the non-finite clause, and the agent of that complement is an, again optional PP, just as the passive in the English translation. Furthermore, (19) with overt PP contains stronger information, as it entails (17) and (18), but not vice versa.  

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20) a. Jan liet zichzelf knippen.  
   b. John let SELF cut.  
   c. John let himself cut.  

In (20) the SELF reflexive creates an ambiguity that (19) lacks, for SELF could, but need not be an agentive subject of the non-finite complement. If it is agentive, of course, the exceptional case marking construction would be ungrammatical with a PP specifying another agent of the predicate. Economizing on the agentive PP as in a passive, (20) shares an interpretation with (19) where SELF as internal argument would only add the constrastive focus over SE. But (20) adds the ECM interpretation with an implicit internal argument, as in the English translation (20c).  

   b. Jan let him cut.  
   c. John let him cut.  

A non-reflexive pronoun cannot be interpreted as coreferential with the subject, as in (21), when they are co-arguments of the predicate. The interpretation of (21) requires disjoint reference, with either a deictic interpretation of the pronoun or one coreferring with a
referent available in memory, introduced by referential NP in prior discourse. In either case, (21) would be ambiguous between assigning the accusative case pronoun either the agent role in an ECM construction, or the patient role, just as the passive (20). In the scope of the focus adverb *alleen*/only, however, the accusative case marked pronoun is acceptable in (22), to corefer to John, as SE does not allow for focus, cf.(9) above, and *zichzelf* would corefer with the local subject, the barber. 7

22) a. Jan liet (de barbier) alleen hem knippen.
   
   b. John let the barber (only) him cut.

   c. John let the barber cut (only) him.

The focus meaning triggered by *only* creates a focus frame in the context, containing all situations of John letting the barber shave someone, who is then uniquely identified to be John himself. The shaver may again be an implicit argument, and if so, SELF is the preferred way to encode coreference with the subject of the main clause, as in (23), whereas SE would be ungrammatical, not allowing focus. If (22) suppresses the barber argument, the pronoun would get a preferred disjoint reference reading. If SELF is also assigned a non-agentive role, this interpretation yields a strong logical equivalence between (23) with PP and one interpretation of (24).

23) a. Jan liet alleen zichzelf knippen (door iemand).

   b. John let only SELF cut by a barber.

   c. John let only himself get cut by a barber.


   b. John let a barber only him cut.

   c. John let a barber cut only him.

Comparing (23) and (24) in economy, (23) encodes efficiently the focus meaning with
reflexive, and does not require the agent to be expressed overtly in PP. Lacking the agentive PP, (23) is ambiguous in assigning either agentive (ECM) or patient role to SELF. In contrast (24) requires the agent of the non-finite predicate and it is three-fold ambiguous, between (i) interpreting the pronoun to refer to John, (ii) to a deictically determined referent, or (iii) to a referent introduced by prior discourse.

The table in fig. 1 summarizes the results of the observations of (17)-(24), where the NPs are indexed as follows: \( i = \) John, \( j = \) the barber, \( k = \) (reflexive) pronoun; \(+NP_j\) means that the NP is overtly expressed, and \(-NP_j\) that the NP remains implicit, idem for +/- PP. The symbol > indicates the preference order, where the left argument is preferred over the right argument. The indentation makes the levels of preferences transparent.

\[
\begin{align*}
(17) & (i?j) \\
(18) & (i?j) - NP_j > \\
& (i?j) + NP_j \\
(19) & (i=k), (i?j) - NP_j > \\
& (i=k), (i?j) + NP_j \\
(20) & (i=k), (k = patient) - NP_j > \\
& (i=k), (k = patient) + NP_j > \\
& (i=k), (k = agent) \\
(21) & (i?k) (k = patient) (i?j) - NP_j > \\
& (i?k) (k = agent) (i?j) \\
(22) & (i?j) (i ? k) - NP_j > \\
& (i?j) (i = k) + NP_j > \\
& (i?j) (i ? k) + NP_j \\
(23) & (i?j) (i = k) (k=patient) - NP_j > \\
& (i?j) (i = k) (k=agent) - NP_j > \\
& (i?j) (i = k) (k=patient) + NP_j \\
(24) & (i?j) (i = k) > \\
& (i?j) (i ? k)
\end{align*}
\]

Figure 1. Referential conditions in (17)-(24)

The table in fig. 1 summarizes the observations discussed above, but it does not provide much analytical insight into the semantic forces at work in arriving at these interpretations. Nor does it separate the speaker’s economic interests from those of the consumer of the
information. In a traditional or in a dynamic modeltheoretic semantics coreference conditions would either be imposed by meaning-postulates, or, as in DRT, by design of the construction rules. To offer an insightful explanation into the data and preference rankings requires an approach in which these speaker and hearer constraints are explicit and for each interpretation it is determined how it strikes an optimal balance between them. This is presented in the next section.

5. Optimizing constraint satisfaction

In Optimality Theory (17) is considered simplest and most economical, eventhough it does not make it clear whether John voluntarily gets cut or against his wishes. Lacking explicit information on who is in control, the hearer will assume that the agent has the control over the described situation, as stated in constraint C1.

C1. The agent controls the action described by the predicate.

This constraint C1 cuts to both sides, as the speaker uses it in economizing on his words and utterance effort in suppressing control information when the agent is in control, and the hearer derives from it the information that the controller is the agent, unless there is evidence to the contrary. This can be made explicit in the speaker constraint SC1 and hearer constraint HC1 below.

SC1. If the agent is in control, no need to say so.

CC1. If there is no control information, the controller is the agent.

The hearer would have to continue after (17) with (25), if he wanted to find out whether John consented to being subjected to the action.

25) a. Vond Jan dat goed?
    b. Found John that good?
c. Did John approve?

To continue with (25) after (19) would be markedly redundant, or at best demonstrate ignorance of the meaning of *let*, for *let* already assigns the control role to its subject. The default constraint that the agent controls the action, SC1, is flouted by (19), and it also adds expenses on the part of the speaker for having to use two, instead of just one predicate. But (19) saves the hearer from having to ask (25) and the speaker again from answering it. The semantic content of a light verb is to assign a different thematic role to its subject, while it corefers with an argument of its non-finite complement. If a light verb is analyzed as a relation between its external argument and an event interpreting the descriptive predicate in its complement, this inviolable constraint is captured as lexical meaning-postulate in (26).

26) If $P$ is an element in the set of light verbs \{HAVE, MAKE, GET, LET, ...\}, then

$$\forall P \forall Q \forall x \forall y \forall e \forall e' \left[ P(x, e) & Q(e', ..., y, ...) & e = e' & y = x \Rightarrow \text{th}(x) \neq \text{th}(y) \right]$$

The constraint SC2 that uttering fewer words is preferable for a speaker is another soft constraint, for it is meaningfully flouted in (19). The hearer’s corresponding constraint HC2 requires him to rely on default rules whenever different interpretations are possible, a meta-constraint that leads him to use CC1 for the interpretation of (17).

SC2. Words cost effort (the more complex they are, the more they cost).

HC2. Use default constraints when ambiguities arise.

Together with Burzio’s referential hierarchy and the assumption that co-arguments of a predicate that are not reflexive marked, must be interpreted as disjoint in reference, we derive that (17) is optimized for a situation where the barber controls his cutting someone else, called John. In comparison, to describe the same situation (18) without agentive PP gains over (17) in SC2, and still supports SC1. The implicit indefinite argument controls the
action, and requires a novel referent, so must be interpreted as disjoint. If (18) without PP is continued with a definite description referring to the barber, whose presupposition is accommodated by resolving it with the inferred existence of the agent argument, the information that the cutter was a barber is recovered, as in (27).

27) The barber used a razorblade.

If (18) is used with PP, the same information can be expressed by continuing with (28).

28) He used a razorblade.

In counting words, (18) -PP +(27) is optimized for SC2, counting -1 (drop 3 words, add 2), and (18) + PP + (28) is less optimal, counting +4 (add 3 words and add 1). But in Burzio’s referential hierarchy (27) with a full referring expression is lower down than (28) with only a pronoun, so (27) demands more mental effort of the hearer, i.e. making an inference and accommodating a presupposition and identifying the referents of both as the same. Referring to someone, i.e. updating the common ground with a new referent, lightens the hearer’s load, if that referent is referred to again in subsequent discourse. For the hearer (18) + PP + (28) would be more optimal than (18) -PP +(27), if the pronoun in (28) could not be interpreted otherwise. But, besides deictically, the pronoun can also be interpreted as coreferential with John, even though conflicting descriptive information would result. That prevents the hearer from choosing that interpretation, as the overarching constraint tells him to avoid contradictions. (HC3), assuming that the speaker wants to be consistent. (SC3).

SC3 Be consistent.

HC3 Avoid contradictions.

Although (19) with PP may be most informative, for it entails both (17) and (18), but in OT terms (18) is optimal, unless John controls the action. Pronouns with overt referential antecedents are optimal for the consumer to create coreferential chains in discourse, in
comparison with definite NPs with implicit arguments as antecedents. The latter are optimal for the speaker in economizing on words. In section 6 it is argued, however, that quantified antecedents may reverse this OT ranking for creating discourse cohesion.

In ranking (19) with (20)-(24), (19) economizes for using SE instead of SELF in (20), as morphologically words are more expensive for the producer (SC2), and (19) wins over (20) in being higher in the referential hierarchy for the consumer. Also (19) entails (20) and (21), and not vice versa, as (20) and (21) may assign SELF or the accusative pronoun the agentive role, but in (19) SE cannot support that role. Here OT assesses (19) as the winner, and any modeltheoretic account would consider (19) to have the strongest truth-functional content as well. Finally, in comparing the three focus constructions (22)-(24), (23) is OT optimal in using SELF, since SE is unacceptable here, with an the agent argument in optional PP, referring disjointly as it is indefinite. In contrast, (22) and (24) use a pronoun, that may, but need not corefer with the subject, so they cannot entail (23).

6. Constraining quantification.

With a quantificational NP the economic advantages of SE-reflexives become even more apparent in the Dutch data, when constrained to the fully acceptable bound pronouns in their English translations. Negative quantifiers (left and right decreasing) cannot constitute antecedents of non-reflexive pronouns, cf. (34).

29) a. Een barbier knipte iedere student.
   b. A barber cut every student.
   c. Iedere student werd geknipt (door een barbier).
   d. Every student was cut (by a barber).

30) a. Iedere student liet zich knippen (door een barbier).
b. Every student let SE cut (by a barber).

c. Every student let himself get cut (by a barber).


b. Every student let a barber him cut.

c. Every student let a barber cut him.

The active (29a) and passive (29c) are parallel to (17) and (18), although the definite was replaced by an indefinite here to address scope issues. Scope interpretation is facilitated in (29) by intonation, where H*LL% on *een barbier would change its meaning into the focus meaning the cardinal one barber. The OT advantage of (30) is first of all seen in C2, when reassigning the control to the student argument with the light verb construction. Making the barber argument implicit in (30), it is existentially quantified and must remain in the scope of the quantified subject, that now binds the SE reflexive. Accordingly, (30) without PP is optimal, as it avoids the ambiguity between the asserted NPs, present in (29a) and (29c) with PP. As any argument within the nuclear scope of the quantificational subject does not bind pronouns in subsequent discourse, any NP anaphoric to it must accommodate its presupposition within that domain. If a definite description is interpreted as continuing reference to the implicit agent of the cutting, its presupposition may be locally accommodated within the nuclear scope of the non-finite predicate of the preceding sentence, as in (32). This is strongly supported by the descriptive content, as using a razorblad specifies the way in which the students were cut. The quantified subject of (30) thus extends its subordination to the following sentence, eventhough ordinarily quantifiers have no dynamic effect in discourse and restrain their binding potential to sentence internal dependencies.

32) a. De barbier gebruikte een scheermes.
b. The barber used a razorblade.

Of course, (32) also allows for a globally accommodated existential presupposition, introducing one barber cutting all the students. But this would require considerably more processing effort from the consumer, as he would also have to force wide scope to the existentially quantified implicit argument to make it corefer with the accommodated presupposition introducing the barber as the one doing the cutting. From OT perspective the same information could much more economically be expressed using (33).

33) a. Eén barber (H*LL%) knipte iedere student. Hij gebruikte een scheermes.

   b. One barber cut every student. He used a razorblade.

Asserting a referential NP optimizes discourse coreference, whereas accommodating presuppositions of anaphorically interpreted definite descriptions is relatively more costly. Since (33) is optimal for a wide scope barber, (30) –PP continued with (32) is optimal for a narrow scope interpretation of the barber.

34) a. ?* Iedere student liet een barber hem knippen.

   b. Every student let a barber him cut.

   c. Every student let a barber cut him.

When a non-reflexive pronoun is used in Dutch as in (34), it is considerably harder, if not outright unacceptable, to interpret it as bound by the quantificational subject, than as coreferential with a proper name. This is in accordance with what Burzio’s referential hierarchy would predict. In (34a) the pronoun is preferred to refer to a referent available in the situation of use or to one available from memory, as (30) is already optimal in using a reflexive pronoun and making the agent of the predicate implicit, confining it to nuclear scope. In English (34c), however, the bound interpretation of the pronoun is certainly acceptable and even preferred over non-local interpretations. This is a sharp contrast with
the economical advantages of the Dutch SE-reflexive.

When the quantifier is negative, decreasing in both the denotation of the noun and the predicate, the reflexive is the only option in a light verb construction (36), as the negative quantifier in (37) does not bind the pronoun in Dutch, though the English translation is fine.

35)  a. Een barbier knipte geen student.
     b. A barber cut no student.
     c. Geen student werd geknipt (door een barbier).
     d. No student was cut (by a barber).

36)  a. Geen student liet zich knippen (door een barbier).
     b. No student let SE cut (by a barber).
     c. No student let himself get cut (by a barber).

     b. No student let a barber him cut.
     c. No student let a barber cut him.

Burzio’s referential hierarchy assigns (36) a higher value than (37), which matches the Dutch data better than the English ones, as (36c) takes a toll on word count (C2) over (37c). English, lacking SE reflexives, makes word count outweigh the referential hierarchy.

7. Conclusions

The results of this paper may be inconclusive, as it is only outlined what an OT approach to binding may have to offer as explanatory account of preferences in description of a given situation. The primary goal has been to analyze some of the constraints at work for both producer and consumer of the information in encoding referential (in)dependencies, contrasting English to Dutch, with its pervasive use of light verbs and SE-reflexives. Such
cognitive issues of information production and processing have not been addressed within the more traditional natural language semantics based on modeltheoretic tools, even within the now current systems of dynamic semantic interpretation. The next step is to render these insights useful as constraints on information sharing in a wider semantic theory, where interests of language users play a role, sometimes a conflicting one, in determining how information should optimally be expressed in a given context. In such a theory of information sharing there is room for analyzing how misinterpretations and misunderstandings arise and may be resolved, a concern that has suffered long neglect due to the Fregean adagio that they fall outside the scope of semantic theory.
8. References (still to be completed)

Burzio, L. (1997?), Anaphora and soft constraints. ......

Notes.

1 This paper was read at the conference The Optimization of Interpretation, UiL-OTS, U. of Utrecht, January 5, 2000. I am grateful to Helen de Hoop for organizing the innovative program for natural language semanticists and for providing me afterwards with many helpful comments on the paper. Of course, all remaining misunderstandings and errors are attributable to me.
2 Modifying PPs are not arguments of the verbal predicate, but adjuncts to it, hence are not taken into consideration in this paper.
3 Light verbs I take to be verbs that have little or no descriptive content, but that may restructure the arguments of a predicate or reassign thematic roles. Causative verbs like have or let are examples of light verbs, and serve to make the agent causing the action overt. In the classical example of Jane gave Sally a kiss, give serves to turn a transitive predicate structure into a di-transitive one and facilitates discourse pronominal reference to the nominalized predicate as internal argument, a kiss, in subsequent sentence, e.g. It landed on her cheek.
4 This is an important difference in creating discourse cohesion with two classes of definites, pronouns and definite descriptions. Only rather special scenarios may support an inferred antecedent as in Jane is pregnant. It is a boy. A definite description allows its presupposed referent to be identified with a referent inferred from prior discourse. No such bridging is available for ordinary pronouns, although high pitch pronouns with appositive relative clauses (e.g. He who Jane is pregnant with, (H*LL%) ) could very well in this respect have the same semantic properties as definite descriptions. Cf. ter Meulen (1999).
5 Here I am disregarding the tacit exclusion of women of the domain of this universal quantifier.
6 Without overt PP (18) and (19) would still entail that someone cut John, existentially generalizing over the agent subject of the non-finite complement.
7 Jack Hoeksema first remarked that the focus context would require a coreferential non-reflexive pronoun. His remark led me to clarify the analysis of the data significantly.
8 The conflict arises as an incompatibility between the meaning of let and the meaning of the descriptive predicates, whereas using a razorblade is a specification of the way in which John got cut.