

AN ANALYSIS OF CERTAIN REFLEXIVE VERBS
AND ITS IMPLICATIONS FOR THE ORGANIZATION OF THE
LEXICON¹

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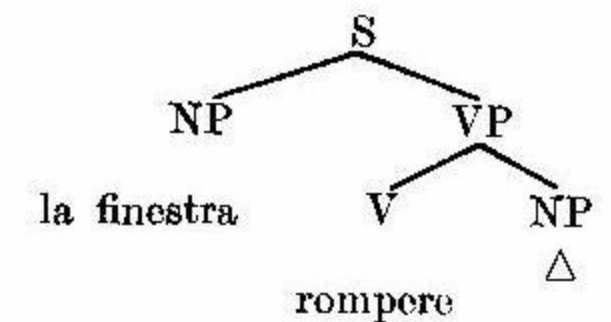
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A widespread linguistic phenomenon (English being, perhaps, one of the few exceptions among the Indo-European languages) is the use of the reflexive morpheme in other than transitive reflexive sentences. I will concern myself primarily with sentences corresponding to intransitive sentences in English, which contain among others the so-called inchoative verbs, and sentences which correspond to English agentless passive sentences. Two examples from Italian follow:

- (1) La finestra si ruppe
The window broke
- (2) Le mele si vendono al mercato
The apples (are) sold at the market

Using data from Italian and Polish, I will propose that the deep structure of examples like (1) and (2) are (3) and (4) respectively:

(3)



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(D) Both syntactic and morphological information play a crucial role in the organization of the lexicon.

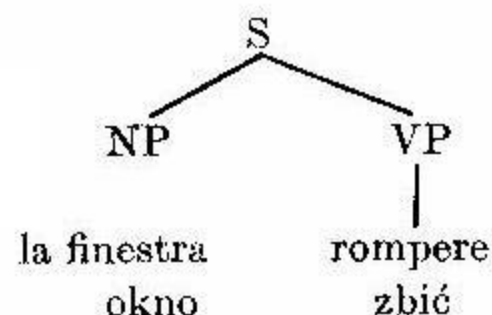
These are, of course, empirical issues, and have been stated in their strongest form. The paper is divided into two sections. In Section 1 I will present the syntactic analysis, and in Section 2 I will discuss the lexical mechanisms necessary for the interpretation of the relevant examples.

1. In Polish and Italian there exists a large class of sentences like (1) and the following, which contain a reflexive particle that is not interpreted as a reflexive:

- (7) a *Il ghiaccio si scioglie.*
The ice is melting.
b *Il cielo si arrossa.*
The sky is reddening/turning red.
- (8) a *Okno zbito się.*
The window broke.
b *Lód stopił się.*
The ice melted.
c *Niebo poczerniło się.*
The sky turned black.
d *Pierwszego Maja ulice zaczerwieniły się od flag.*
On the first of May the streets were red with flags.
e *Drzwi otworzyły się.*
The door opened.

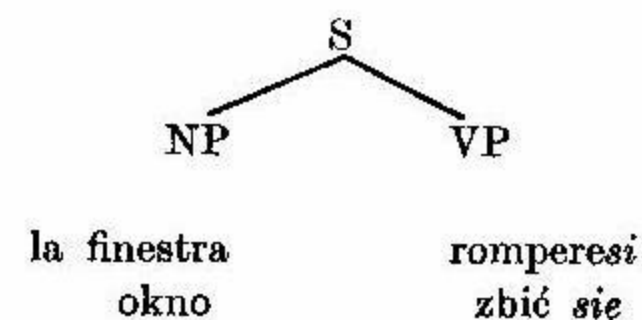
These examples correspond to English sentences with intransitive verbs: *the window broke* and so on. If, however, intransitive deep structures, such as (9), are assigned to these examples, the particle *si* (Ital.) or *się* (Polish) must be arbitrarily inserted at some stage in the derivations in order to get the sentences shown in (1), (7) and (8):

(9)



The particles *si/się* could be analyzed as intransitive markers which are added to the verbs in the lexicon, in which case examples (1), (7) and (8) would have deep structures like the following:

(10)



(This is more plausible in Italian, where the particle attaches to the infinitive form of the verb, than it is in Polish). Such an analysis, however, leaves unexplained why the intransitive marker *si/się* occurs only with some intransitive verbs.³ For example, the following sentences are ungrammatical:

- (11) a **Il cavallo si galoppava.*
The horse was galloping.
b **Il cane si camminava.*
The dog was walking.
c **I fiori si crescono.*
The flowers are growing.
- (12) a **Koń pogalopował się szybko.*
The horse galloped quickly.
b **Kwiaty rosna się.*
The flowers are growing.
c **On chodził się po ulicy.*
He walked down the street.
d **Szklanka spadła się na podłogę.*
The glass dropped to the floor.

These examples can be made grammatical by removing the reflexive particles *si/się* as shown:

- (13) a *Il cavallo galoppava.*
b *Il cane camminava.*
c *I fiori crescono.*
- (14) a *Koń pogalopował szybko.*
b *Kwiaty rosna.*
c *On chodził po ulicy.*
d *Szklanka spadła na podłogę.*

³ This is not, strictly speaking, true. Such a lexical process of detransitivization could be formulated whereby the particle *si* is added to certain verbs marked [+transitive]. However, in any non-syntactic analysis, the occurrence of the reflexive form and not some other marker (like *-eje* in Polish) cannot be explained.

The verbs in examples (11) and (12) differ from the verbs in (1), (7) and (8) in that the latter cannot occur in a transitive structure, while the former can. This is illustrated below:

- (15) *a* *Giovanni galoppava il cavallo.
John galloped the horse.
b *Giovanni cresce i fiori.
John grows flowers.
- (16) *a* *Marek pogalopował konia.
Mark galloped the horse.
b *Marek rośnie kwiaty.
Mark grows flowers.
c *Marek spadł szklanę.
Mark dropped the glass.

but:

- (17) *a* Giovanni rompe la finestra.
John broke the window.
b Giovanni apre la porta.
John is opening the door.
- (18) *a* Marek zbił okno.
Mark broke the window.
b Marek stopił lód.
Mark melted the ice.
c Jan poczerwił półkę.
Jan blackened the shelf.
d Marek otworzył drzwi.
Mark opened the door.
e Krew zaczerwieniła wodę.
Blood reddened the water.

It is the case then that *si/się* occur in "intransitive" sentences only with verbs which can also occur as transitive verbs. This fact cannot be explained by analyzing *si/się* as an intransitive marker as above.

Another, perhaps less important, fact which is a coincidence in such an analysis is that the "intransitive" marker *si/się* and the reflexive particle *si/się* have the same phonological shape and display the same surface syntactic behavior. In Italian, *si* immediately precedes the main verb or auxiliary — if one is present — as shown in (19), a true reflexive sentence.

- (19) Giovanni *si* e'tagliato.
John cut himself.

This is precisely where the "intransitive marker" *si* occurs:

- (1) La finestra *si* rompe.
The window broke.
(20) La finestra *si* e'rotta.
The window has broken.

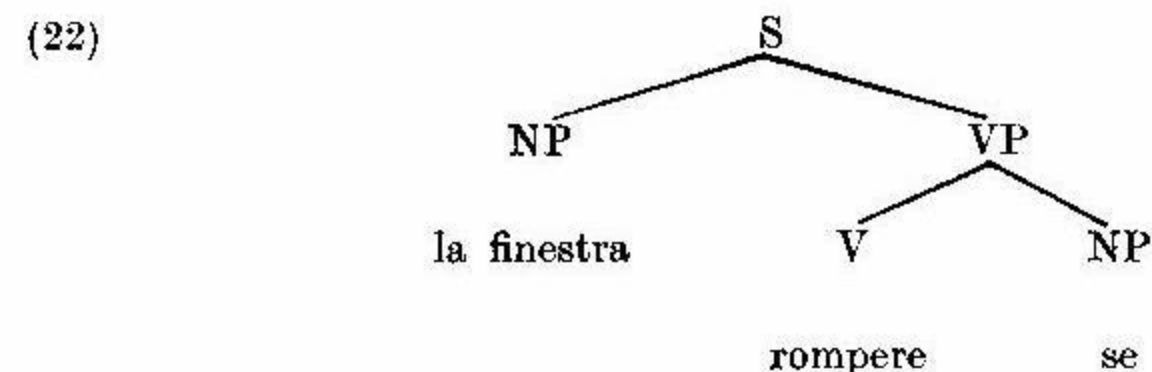
The same situation obtains in Polish. Compare the true reflexive sentence (21) with the intransitive examples:

- (21) Jan zaciał *się* przy goleniu.
or Jan *się* zaciał przy goleniu.
Jan cut himself while shaving.
(8) *a* Okno zbiło *się*.
or Okno *się* zbiło.
The window broke.

To summarize, the facts left unexplained in an analysis where *si/się* are simply intransitive markers are:

- (5) *Si/się* in their non-reflexive (in these examples, intransitive) use occurs only with verbs which can occur in transitive sentences, and just in case these verbs occur with one lexical NP.
(6) The intransitive marker *si/się* looks and acts like the reflexive particle *si/się*. (Why not use any other morpheme such as *-yi* or *-usky* to denote intransitivity?)

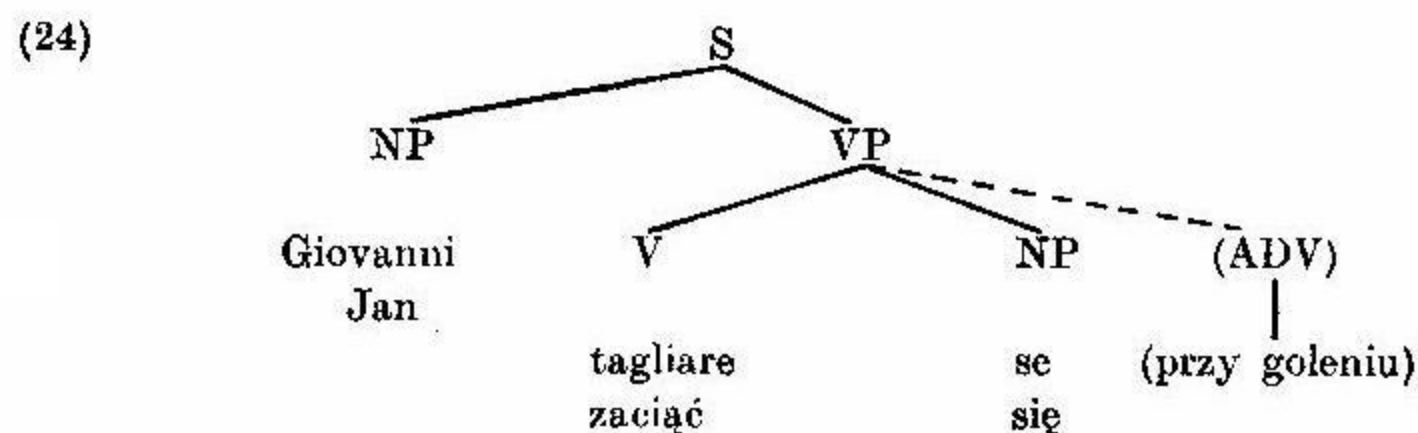
These facts could be explained by analyzing sentences like (1), (7) and (8) as transitive reflexive sentences, assigning them deep structure like the following:



(I am assuming that some pronouns and reflexives are lexically inserted). The derivation of these sentences would then parallel those of true reflexive sentences like (23):

- (23) *a* Giovanni *si* e'tagliato.
John cut himself.
b Jan zaciał *się* przy goleniu.
Jan cut himself while shaving.

which have deep structures like the following:



Sentences like (1), (7) and (8), however, differ from true reflexive sentences in several ways:

First, examples like (1) do not mean: "the window broke itself". The reflexive interpretation can be blocked by preventing the reflexive interpretation rule from operating on a sentence with an inanimate (non-agentive) subject, but not without complicating the rule.

Secondly, for both Italian and Polish, the rule which interprets reciprocals is sensitive to the same structure as the reflexive rule. Thus, with plural, non-coreferential subjects, a sentence in these languages can be ambiguous between a reflexive and a reciprocal reading:

(25) Giovanni e Luigi si sono tagliati.

a John and Louis cut themselves.

b John and Louis cut each other.

(26) Jan i Marek skaleczyli się.

a Jan and Mark cut themselves.

b Jan and Mark cut each other.

Sentences like (1) can never have a reciprocal reading⁴:

(27) Le finestre si ruppero.

*The windows broke each other.

(28) Okna stłukły się.

*The windows broke each other.

This too can be prevented by blocking the reciprocal interpretation rule when the subject is inanimate, again increasing the complexity of the rule.

Thirdly, true reflexive sentences are special cases of normal transitive structures. That is, examples (23):

⁴ These examples can have a reciprocal reading in certain contexts such as *the windows broke each other when they slammed together at the height of the storm*: In contrast, the true reflexive reading can never be brought out: ? **the window broke itself when it slammed into its frame during the storm*. Reciprocal sentences like the above are truly transitive, and not analogous to the inchoative examples (27) and (28).

(23) a Giovanni si e'tagliato.

b Jan zaciął się przy goleniu.

are parallel in interpretation to the following transitive sentences:

(29) a Giovanni ha tagliato Luigi.

John cut Louis.

b Jan zaciął Marka.

Jan cut Mark.

and differ from them only because the objects of (23) are coreferential with the subjects.

Sentences like (1), however, have no parallel transitive counterparts such as (30)⁵:

(30) a *La finestra ruppe la porta.

The window broke the door.

b *Okno stłukło szklanę.

The window broke the glass.

To block these sentences, there must be obligatory coreference between their subjects and objects. A mechanism for insuring this could surely be created, perhaps again appealing to the fact that the subjects are inanimate. It seems, however, that little or nothing is explained by assigning this class of sentences a transitive reflexive deep structure, and then not only blocking the interpretive rules normally associated with such structures, but restricting the objects as above.

A fourth fact makes this analysis less plausible. True reflexive sentences in Italian can contain the reflexive particle in uncliticized form followed by the adjective *stesso*, "the same". Thus (31) is a variant of (23) a:

(31) Giovanni ha tagliato se stesso.

John cut himself.

Sentences like (1) cannot occur in this form:

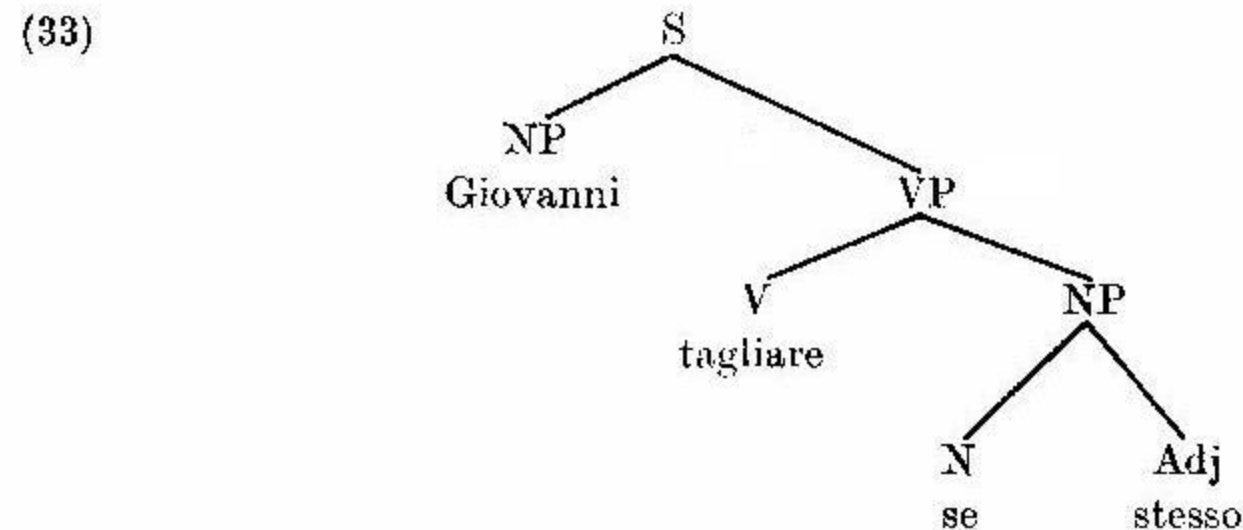
(32) *La finestra ruppe se stesso.

The window broke.

If both sentence types have the same deep structure, there is no straightforward way of preventing the occurrence of the adjective *stesso* in one case

⁵ Such transitive counterparts are only acceptable in special contexts such as fairy tales, children's cartoons, etc. They are not acceptable in the same set of possible worlds in which the inchoative (intransitive) ones are acceptable, as is the case with truly reflexive/transitive sentence pairs.

but not the other. In a transitive reflexive (or non-reflexive) structure, this adjective can occur. The deep structure of (31) is (33):



The situation is similar in Polish. The reflexive pronoun can occur in a longer form (which is case-marked) in true reflexive sentences, but not in examples like (1). This is illustrated below:

- (34) a Jan lubi siebie.
 Jan likes himself (Acc.).
 b *Okno stłukło siebie.
 The window broke.

Regardless of the mechanism chosen to account for this, it cannot be done elegantly if both sentences have the same (pre-lexical) deep structure.

An analysis which explains facts (5) and (6), and from which the differences between examples like (1), (7) and (8) on the one hand and true reflexives on the other, follow, can be constructed in the following manner:

I assume with Jackendoff (1972) that rules which interpret grammatical relations operate on deep structures, while those which interpret such relations as coreference apply cyclically to derived structures during the course of the derivation. The reflexive interpretation rule alluded to previously actually represents the operation of two or more different interpretive rules. Thus, for example, in (23) *a*, with deep structure (24); the rules which interpret grammatical relations interpret structure (24) as a transitive structure; that is, it contains a verb followed by a lexical NP object in configuration (35):

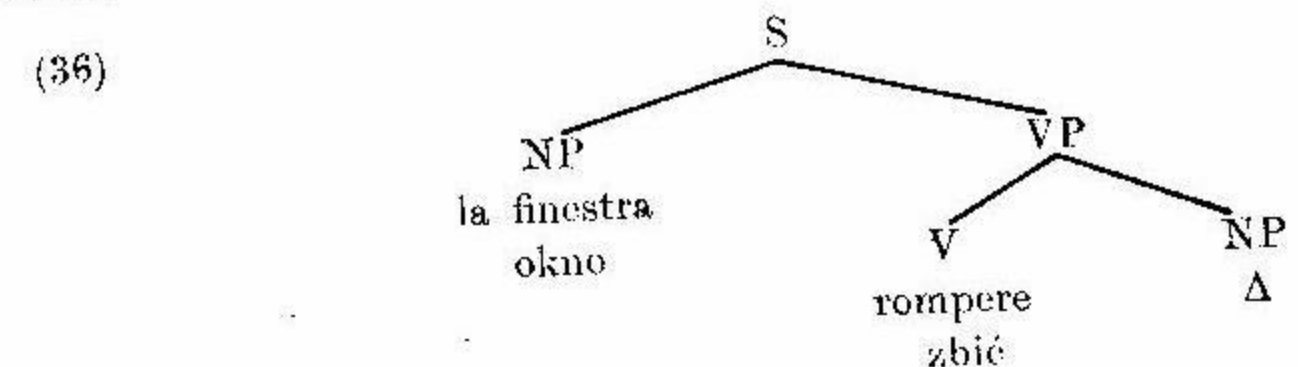
- (35) [[tagliare] [se]]
 VP V V NP NP VP

Next, the rule that interprets coreference, and which is sensitive to the presence of *se*, applies to say that the subject and object are coreferential. (The same process, of course, occurs in Polish).

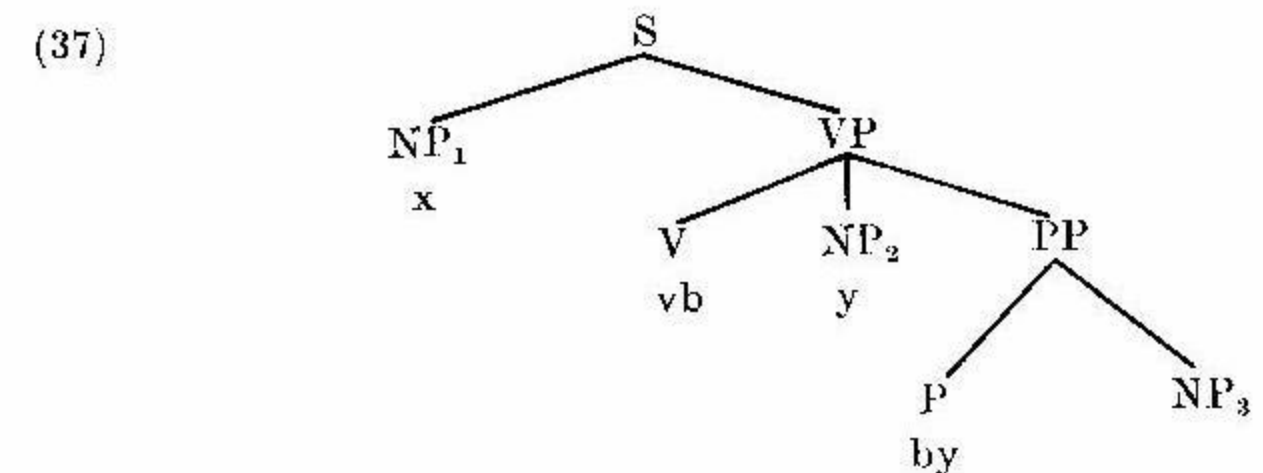
A reflexive sentence, then, is simply a transitive sentence whose subject and object are coreferential. If some structure like (24) is the deep structure

for sentences like (1), then the rules which grammatically interpret the configuration (35) would have to be blocked just in case the subject, which is outside of the VP, is inanimate.

If, however, sentences like (1), (7) and (8) are assigned the following deep structure, the differences between them and true reflexive sentences can be explained:



The symbol Δ has been inserted in the object NP slot to signify that this node is empty. Now I need only assume that the rules which interpret grammatical relations ignore nodes that dominate Δ . This assumption is not ad hoc, and in fact is needed by Emonds (1970) to prevent, among other things double interpretation of "agent" in passive sentences to which he assigned deep structures like (37):

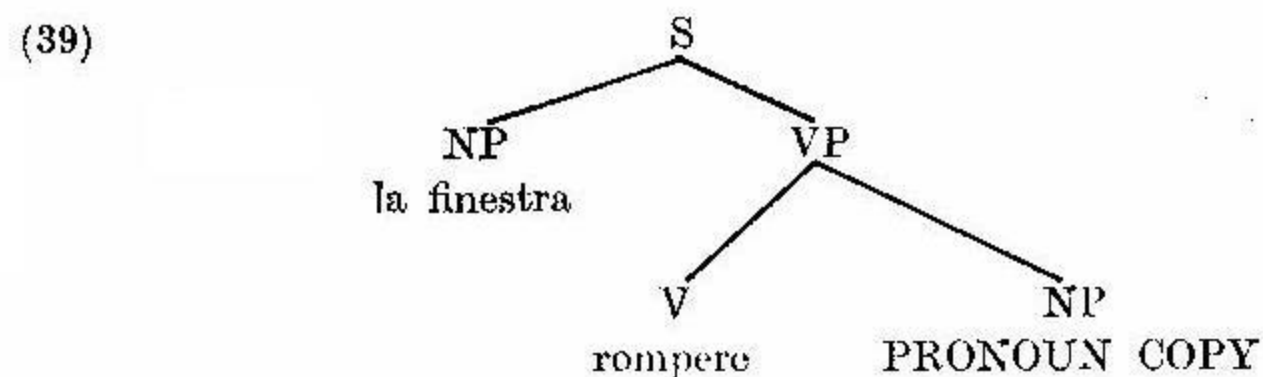


where *x*, *vb*, and *y* stand for lexical items. If Δ nodes were interpreted grammatically, both NP_1 and NP_3 would be interpreted as the agent in this sentence — yet passive sentences have only one agent like their active counterparts. This assumption is sufficient to block the rule which interprets whether a sentence is transitive or not without making this rule sensitive to anything outside the VP. In this case, for sentences like (1) with deep structure (36), the rule looks at the configuration shown below:

- (38) [[rompere] [Δ]]
 VP V V NP NP VP

It does not apply, in which case the sentence is interpreted as being intransitive.

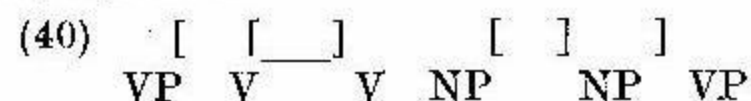
Following another assumption of Emonds that Δ nodes must be filled at some time in the derivation, I will formulate a rule to do this which copies a pronominal copy of the subject in the Δ position, converting structure (36) into the following:



Since the pronoun copy is a clausemate of the subject, and since the copies resulting from rules of this type are necessarily coreferential with the item being copied, a reflexive form appears on the surface. This reflexive can be interpreted by the reflexive interpretation rule as being coreferential with the subject, but since the sentence is not transitive, it is not interpreted as a true reflexive.

This analysis automatically explains why sentences like (1) cannot have a reflexive or reciprocal interpretation. Moreover, it prevents the occurrence of the adjective *stesso* in Italian since the copy rule replaces a Δ which is exhaustively dominated by the object NP with a pronominal copy of the subject. This account will not prevent the full reflexive form *siebie* from occurring in the Polish sentences. However, the analysis, by assigning different deep structures and derivational histories to the "intransitive" and true reflexive sentences, provides a framework within which the occurrence of this form can be plausibly accounted for.⁶ Finally, this analysis explains fact (6), why the *si/się* in sentences like (1) looks and acts like the reflexive particle in true reflexive sentences.

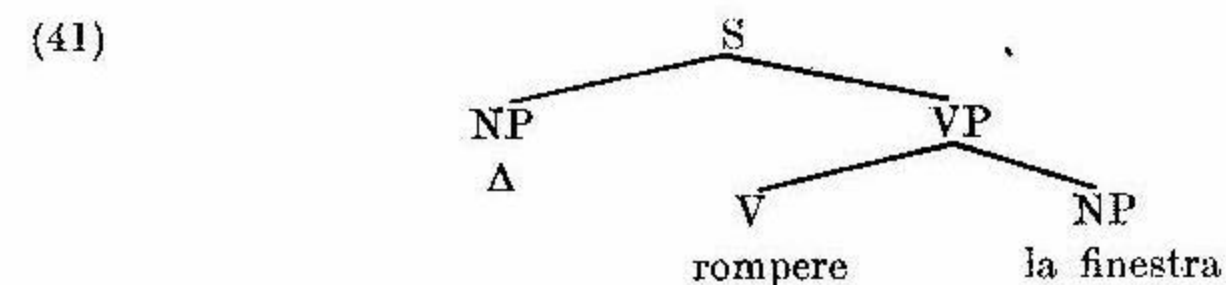
Fact (5), the distribution of the "intransitive" or "non-reflexive" *si/się*, can be explained by having one lexical entry for verbs like "rompere", in which they are listed as being transitive, that is, as occurring in a structure like (40) below:



⁶ Full reflexive forms, for example, might be restricted to NPs marked [+emphatic]. In the proposed analysis, the object NP is empty (and cannot contrast with anything), and therefore cannot be marked in this way. This will prevent the occurrence of the full forms.

and by having a process of detransitivization which can place a Δ in the object NP for certain classes of transitive verbs. (I discuss this process more fully later). This Δ triggers the various operations mentioned above, ultimately producing the non-reflexive *si/się*.

An alternative method of analyzing sentences like (1), (7) and (8) is a variation of Barbara Partee's (1965) analysis of sentences like these in English. In this analysis sentences like these are assigned deep structures like (41):



in which the subject NP is Δ and *la finestra* is the deep object of the verb *rompere*. A copying rule (which replaces Partee's original movement rule) will apply to move the object to subject position, leaving behind a pronominal copy which is realized on the surface as the reflexive particle *si/się*. This analysis will account for the facts mentioned so far. There are, however, good reasons for not choosing this alternative for sentences like (1) in both Italian and Polish.

There exist in Italian, sentences like (2) and (42) which superficially resemble inchoatives like (1), but whose surface subjects are clearly the semantic objects, suggesting that they have deep structures like (41):

- (2) Le mele si vendono al mercato.
Apples (are) sold at the market.
- (42)a Le lezioni si studiano attentamente.
The lessons (are) studied attentively.
- b Il giornale si pubblica la sera.
The newspaper (is) published in the evening.

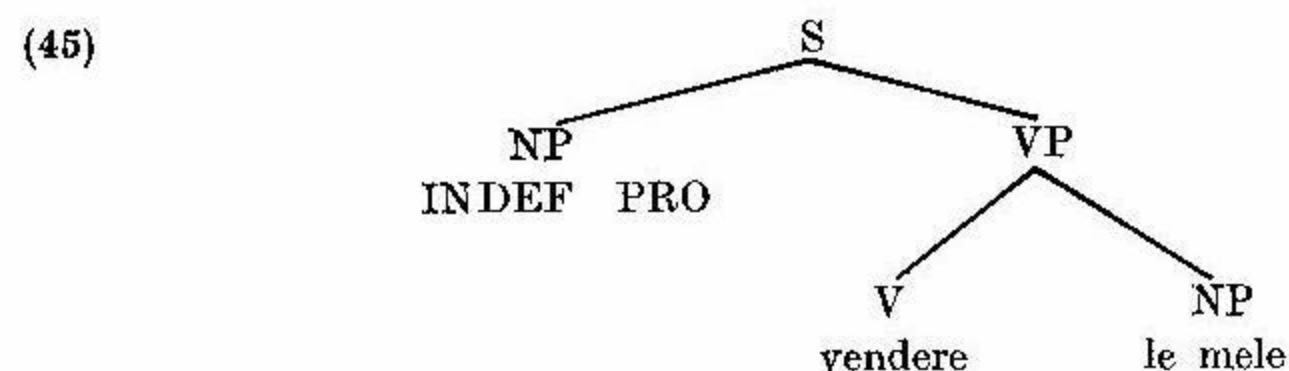
These sentences are also non-reflexive and differ from true reflexive sentences in the same way that sentences like (1) do: (A) They are not interpreted as reflexives or reciprocals. Example (2) does not mean: "the apples sold themselves" or "the apples sold each other". (B) Sentences like (2) have no transitive counterparts with non-coreferential objects. Thus example (43) is ungrammatical:

- (43) *Le mele vendono la latte al mercato.
The apples sell the milk at the market.

(C) Sentences like (2) have no variant containing *se stesso*. Thus example (44) is ungrammatical:

- (44) *Le mele vendono se stesso.

These facts can be explained by assigning deep structure (41) to these sentences. Alternatively, they might be assigned deep structures like (45), which contain an indefinite pronoun as deep subject rather than Δ . Then somehow this pronoun would be realized on the surface as *si*:



This is a plausible alternative especially since these sentences occur with the lexical NP in object position on the surface as seen in (46):

- (46) Si vendono le mele.
The apples (are) sold.

Such an analysis, however, is not tenable since it predicts that we would only get passives rather than sentences like (2) and (42), which are not passive, unless the passive rule is complicated. It also predicts that there would be no verb agreement with the full NP in sentences like these, when in fact the verbs generally agree with the deep "objects", as seen in (42)*a* and *b*. Again, by complicating the agreement rule, we could accomplish this. Finally, this analysis cannot explain easily the ungrammaticality of (47) which could be formed from (2) with deep structure (45) by lexically inserting a pronoun instead of the full NP *le mele*:

- (47) *Se le vendono al mercato.
They (are) sold at the market.

By assigning these sentences deep structures like (32), with an empty subject, they can be derived by means of the object copying rule referred to previously. The passive rule can remain unchanged, and the verb agreement and pronoun case assignment rules, also unmodified, can be applied when the "object" NP is in "subject" position.

Sentences like (2) and (42) differ from sentences like (1) and (7) in that, as I previously mentioned, their surface subjects are clearly the semantic objects of the verbs that they occur with, while this is not so clearly the case with sentences like (1) and (7). This intuition is borne out by the following facts:

In sentences like (2) and (42), adverb cooccurrences facts are identical to those in transitive sentences containing the same verbs and NPs as objects. Thus (42)*a* and the following both accept the adverb *attentamente*:

- (48) Giovanni ha studiato le lezioni attentamente.
John studied the lessons attentively.

For sentences like (1) and (7) this is not the case. Thus (49) is grammatical, but (50) is ungrammatical in its inchoative reading:

- (49) Luigi rompe la finestra inavvertitamente.
Louis broke the window inadvertently.
(50) *La finestra si rompe inavvertitamente.
The window broke inadvertently.

Example (50) can only mean: "the window (was) broken inadvertently/someone broke the window inadvertently" (the type of meaning of sentences like (2) and (42)). This adverb can occur in other impersonal sentences like (2) as seen by the grammaticality of (51):

- (51) Le mele si vendono inavvertitamente.
The apples (are) sold inadvertently.

These facts show that a Δ , or empty subject, does not affect the adverb co-occurrence restrictions as displayed by the corresponding full transitive sentences. The difference between sentences like (1) and these like (2), in this regard, and with respect to the meaning difference between them can be explained if sentences like (1) are not assigned structure (41) — which is the deep structure for sentences like (2) — but rather assigned structure (36), which contains the lexical NP as deep subject. The adverb, *inavvertitamente*, which occurs with a higher animate deep subject, can occur in (49), but not in (50) as an inchoative whose deep subject is *la finestra*. This analysis predicts the possibility of ambiguity between the inchoative and impersonal readings, and this occurs as shown in (52):

- (52) Il ghiaccio si rompe al lago.
a The ice is breaking at the lake (inchoative)
b The ice is being broken at the lake/somebody is breaking ice at the lake. (impersonal)

In Polish, there are also impersonal sentences roughly equivalent semantically to the Italian ones. Some examples are shown below:

- (53)*a* Jabłka sprzedaje się w opakowaniu.
Apples (are) sold wrapped up.
b Bilety tramwajowe sprzedaje się w kioskach Ruchu.
Tram tickets (are) sold at the Ruch.
c Gazety poranne drukuje się wieczorem.
Morning papers (are) published in the evening.

These examples, however, differ syntactically from both their Italian counterparts and Polish inchoative sentences. The lexical NPs in all cases are in the Accusative case, and the verb is invariantly third person singular regardless of the number of the lexical NP. It is clear from their syntax that these sentences have different deep structures than the inchoatives, and that they should be assigned either structure (41), like the Italian impersonals, or structure (45), which contains an INDEF PRO subject. The fact that the verbs in these sentences are not passive in form argues against structure (45), as it did for the Italian sentences. The surface forms of the Polish impersonals should thus be derived from (pre-lexical) deep structures like (41) by a rule of copying similar to the Italian rule. In Polish, this rule must be very late, following case assignment and verb agreement. The copying rule, as before, is the source of the reflexive pronoun. The adverb facts in Polish appear to be the same as the Italian ones. Certain adverbs can appear either in transitive sentences or impersonals containing the same verb but not in both transitive sentences and their corresponding inchoatives. This is illustrated below:

- (54)*a* Czesław celowo sprzedał jabłka w torebkach.
Czesław sold apples on purpose in bags.
- (55)*a* Jan zbił okno celowo / nieumyślnie.
Jan broke the window on purpose / inadvertently.
- b* *Okno zbiło się celowo / nieumyślnie.
The window broke on purpose / inadvertently.

These examples argue that the inchoatives, like (55)*b* have deep structure (36), and the impersonals have deep structure (41).⁷

The process of detransitivization, whereby a verb subcategorized as being transitive can occur in a VP structure with an unlexicalized, or Δ object NP, appears to be quite widespread in Polish, extending beyond the inchoative verb class. Some additional examples follow:⁸

⁷ In cases where verb-agreement marking and case-marking are neutralized on the surface, it is possible to get ambiguity between inchoative and impersonal readings in Polish (like Italian). Thus the following is ambiguous:

ix. okno się zbija, mleko się wylewa

Certain adverbs (see example (54) and (55)) will disambiguate such examples.

⁸ Some additional examples are:

x. Ta sprawa nigdy się nie wyjaśniła "that situation was never clarified"
Ewa wyjaśniła (mi) ten problem "Eve clarified that problem (for me).

xi. Słońce odbijało się w wodzie "the sun was reflected in the water"
Jan odbijał artykuł "Jan made a copy of the article"
Lustro odbijało promienie słoneczne "the mirror reflected the sunlight"
Lustro odbija promienie słoneczne "a mirror reflects sunlight".

- (56)*a* Jan urodził się w 1948 roku.
Jan (was) born in 1948.
- b* Szkoła utworzyła się w Poznaniu.
The school (was) founded in Poznań.
- c* Jan wychował się u dziadka.
Jan (was) brought up at his grandfather's.
- d* Miasto ulokowało się na brzegu rzeki.
The town (was) located on the bank of the river.

These examples are more or less "passive" in meaning (i.e. they correspond to English agentless passive). However, the verbs appear in the active form with the reflexive particle *się*. These verbs can appear in transitive constructions, in which case no *się* occurs:

- (57)*a* Maria urodziła Jezusa.
Mary gave birth to Jesus.
- b* Profesorowie utworzyli szkołę w Poznaniu.
The professors founded the school in Poznań.
- c* Marek wychował Jana.
Mark raised Jan.
- d* Król Bolesław ulokował miasto na brzegu rzeki.
King Bolesław located the town on the bank of the river.

As was the case with the inchoatives, these sentences exemplify the fact that when a transitive verb occurs with only one lexical NP, the reflexive pronoun must be present.

Examples (56) differ from the Polish impersonal sentences, and are like the Polish inchoatives in that the lexical NPs are in the nominative case, and the verbs agree with them.

When a sentence containing one of these verbs contains an agent in addition to a NP (like those in (56)) in surface subject position, the verb must, as one might expect, be in the passive form:

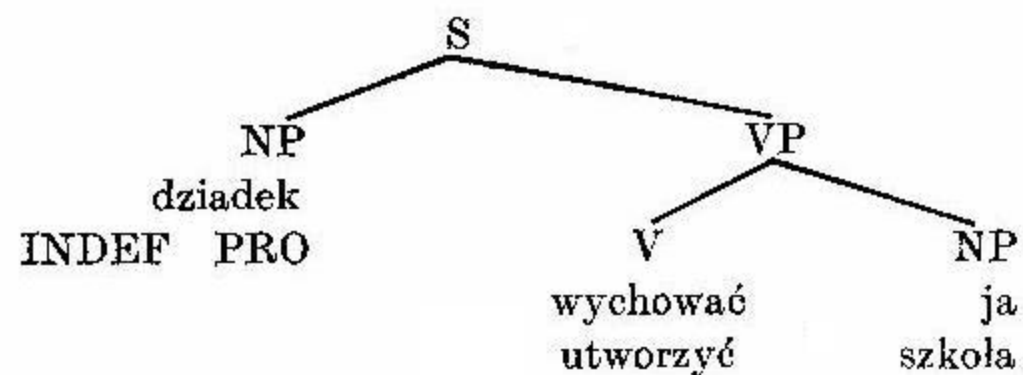
- (58) Zostałem wychowany przez dziadka.
I was brought up by (my) grandfather.

In these cases no *się* occurs. An indefinite agent can be deleted (by a relatively late rule), as in English passives, as shown in (59):

- (59) Szkoła została utworzona w 1875 roku.
The school was founded in 1875.

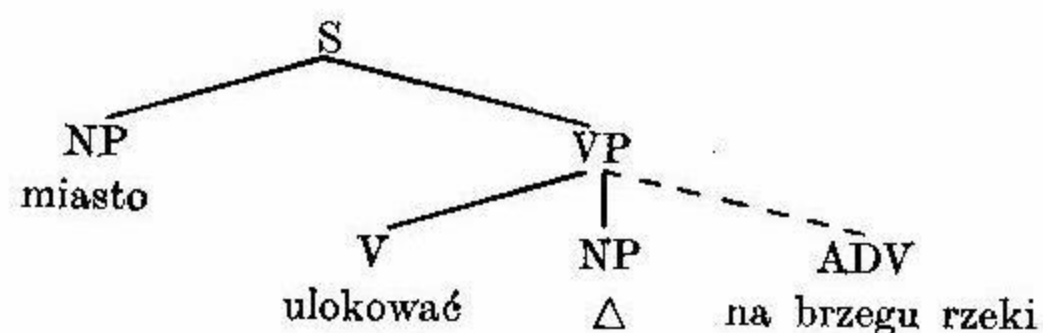
The difference between the true passives, like (58) and (59), and examples (56) can be explained by assigning a transitive deep structure like the following to (58) and (59):

(60)



The passive rule can apply normally to this structure to derive examples (58) and (59). Examples (56) are assigned the following deep structures:

(61)



This structure is identical to that of the inchoative sentences. The only rule that applies is the object copying rule which has the effect of placing a PRO in the object NP position, which ultimately is realized as the reflexive *się*. This type of derivation will account for the fact that the verb is not passive in form and the fact that it agrees with the "subject" NP, distinguishing these examples from impersonals. It will also account for the fact that adverb cooccurrence restrictions, which are the same for active transitive and passive sentence pairs, differ from the restrictions operant in the "reflexive" examples. For example, the adverbs: *celowo* and *specjalnie* (on purpose) can occur in the following active/passive pairs:

(62)*a* Król Bolesław $\left\{ \begin{array}{l} \text{specjalnie} \\ \text{celowo} \end{array} \right\}$ ulokował miasto na brzegu rzeki

King Bolesław purposely located the town on the bank of the river.

b Miasto zostało celowo ulokowane na brzegu rzeki.

The town was purposely located on the bank of the river.

These adverbs cannot occur in the corresponding "reflexive" sentence:

(63) Miasto ulokowało się (?* celowo) na brzegu rzeki.

The town (was) located purposely on the bank of the river.

but they can occur in impersonal sentences. Example (54)*b* and the following, illustrate this: *miasta (Acc.) lokuje się celowo na brzegach rzek* "Towns (are) located purposely on the banks of rivers". The occurrence of such adverbs depends upon the deep-structure subject of the sentence. The ungrammaticality of (63) can be accounted for if its deep structure subject is *miasto* and not

INDEF PRO (the subject of (62)*b*), or (the subject of the impersonal sentences).⁹ Finally, as the analysis predicts, in cases where there is neutralization on the surface of case-marking and verb agreement marking there is ambiguity between the impersonal and "intransitive" (passive-like) readings as shown in the following: *miasto lokuje się na brzegach rzeki* "(they generally) locate a town on the banks of a river" or: "the town is located on the banks of the river". An adverb like *celowo* will disambiguate such sentences in favour of the impersonal reading.

I have shown that these examples and inchoative sentences in Polish display the same syntactic behaviour as regards subject case marking, verb agreement and adverb cooccurrence restrictions, and that neither type is semantically reflexive. These facts can be given a unified explanation if both types are analyzed as cases of the general process of detransitivization, whereby some verbs which can take object NPs are allowed to occur in transitive structures in which the object NP is unlexicalized. Other characteristics of sentences containing detransitized verbs are: the lack of an analogous sentence containing non-coreferential subject and object NPs, and the non-occurrence of the longer, case-inflected reflexive form, *siebie* (examples (56) are all ungrammatical with *siebie*).

In addition to these cases of detransitivization, there are verbs in Italian and Polish which can occur in either transitive or "intransitive" reflexive structures, but which differ in meaning, sometimes substantially, in these contexts. This is illustrated by the following sentence pair in Italian:

(64)*a* Luigi si è alzato alle cinque.

Louis got up at five o'clock.

b Luigi ha alzato la macchina da scrivere.

Louis lifted the typewriter.

The Italian verb *comportare* is similar. In an intransitive reflexive context, it means "behave" as in: *Maria si comporta bene* "Mary behaves well". Used transitively, the verb *comportare* means "to imply" as in: *X comporta Y*. In Polish, the transitive verb *zachować* means "to preserve" while its reflexive counterpart, *zachować się* means "to behave". Likewise, the transitive verb *rozbić się* means "to have an accident". The syntactic evidence, in these cases, argues that examples like (64) are also instances of detransitivization. For example, *Luigi ha alzato se stesso* (with the full reflexive form) can only mean

⁹ These adverbs can occur in other examples: *szkoła utworzyła się celowo...* is acceptable if *szkoła* is thought of as somehow "animate" as in a *school of thought* (e.g. *szkoła Wolnomysłicieli* "school of free thinkers"). It is much harder to force such an interpretation on a noun like *miasto*. Such facts support the argument that the lexical NP in these examples is the deep structure subject and not the object as in the impersonal sentences.

"Louis raised himself" (by means of a block and tackle for instance), the transitive reflexive meaning. If such an analysis of these verbs is correct, then it is not the case that lexical items with different meanings are necessarily separate lexical entries. I will discuss this more fully in Section 2.

In conclusion, I have proposed a process of detransitivization which applies to certain verbs in both Polish and Italian, which can account for the occurrence of the reflexive pronoun in example like (1), (7), (8) and (56) as well as the differences between these examples and "true" (transitive) reflexive sentences. In addition, I have formulated an analysis of Italian and Polish impersonal sentences, which are also reflexive in form, and which also differ from true reflexive sentences. Both sentence types have a common characteristic: they contain verbs which can take two (or more) lexical NP arguments, but which, in these cases, occur with one — the subject in the detransitized sentences, and the object in the impersonal ones. Thus the occurrence of the "non-reflexive" *si/się* as stated in (6), and its similarity to the reflexive forms in true reflexive sentences, as stated in (7), can be explained:

- (6) *Si/się*, in their non-reflexive uses, occur only with verbs which can occur in transitive sentences, and just in case these verbs occur with only one lexical NP.
- (7) The "intransitive" markers, *si/się*, look and act like the reflexive particles *si/się*.

I have not determined the extent of the detransitivization process, but the fact that it extends beyond verbs of the inchoative class in both Italian and Polish, while analogous intransitives in English (such as *the window broke*) do not extend much beyond this class of verbs, suggests that it is not semantically motivated, (which would lead us to expect uniformity across languages), but rather follows from language specific syntactic and/or lexical properties. In Section 2, I discuss some implications of detransitivization for the structure of the lexicon.

2. The structure of the lexicon, within the framework of interpretive semantics is discussed in Jackendoff (1972). In this discussion, which is primarily concerned with a description of English, inchoative verbs (*break*, etc.) are listed in the lexicon under separate entries according to whether they are transitive or intransitive, as illustrated by the following (partial) lexical entries:

- (65)a
- | |
|---|
| open |
| +V |
| +NP ¹ _____ |
| |
| CHANGE (NP ¹ , NOT OPEN, OPEN) |
| <i>physical</i> |

- b
- | |
|---|
| open |
| +V |
| +NP ¹ _____ NP ² |
| CAUSE (NP ¹ , CHANGE (NP ² , NOT OPEN, OPEN)) |
| <i>physical</i> |

He does this because his grammar contains no syntactic transformation to relate sentences containing such verb pairs, and indeed there is no evidence in English that such pairs should be related by a syntactic process. He thus needs both lexical entries to account for the differences in meaning between the members of each such pair. For example, the transitive *open* contains a meaning of direct causation which the intransitive one lacks. Also, the NP that undergoes the change is the direct object in the transitive sentence, and the subject in the intransitive sentence, and as a result, the selectional restrictions differ for the transitive and intransitive members of such sentence pairs.

He suggests that redundancy rules in the lexicon will make the amount of independent information in the lexicon less than if such pairs as (65) were entirely different from each other. Although such rules are not formulated by him, they would presumably be of the following types: (A) Rules which relate specific morphemes to sets of grammatical and semantic properties; and (B) Rules which apply to syntactic classes of lexical items to relate such characteristics as "transitivity" and grammatico-semantic relations like CAUSE, THEME, and so forth. Rules of type A will relate a verb like *open* to its various grammatical properties and "dictionary" definition (represented in (65) as OPEN), thus eliminating the necessity of stating these in one of the lexical entries. Rules of type B might be of the following form:

- (66) ~Trans. (or equivalently, ~[_____NP²]) implies ~CAUSE

These rules, and others, will allow one of the entries in pairs like (65) to be shortened. For example, the intransitive entry could be stated as follows:

- (67)
- | |
|------------------------|
| open |
| +V |
| +NP ¹ _____ |

The type A redundancy rules will apply to this entry to fill in all of the unspecified grammatical and semantic information associated with the morpheme *open* in entry (65)b.¹⁰ (Note that the subcategorization information, NP¹____,

¹⁰ To clarify the discussion, I propose the following schema for (verbal) lexical entries: (following Jackendoff (1972))

is specified in (67), so it is not copied from (65)*b*. After the type A rules have applied, the type B rules, like the one formulated above, will apply to remove such elements as CAUSE and so fourth. In this way, partial lexical entries like (66) can be converted into "full" entries like (65)*a*.

The syntactic facts of Italian and Polish, however, argue against the existence of separate lexical entries for transitive/intransitive (reflexive) verb pairs like *open* and *break*. The occurrence of the reflexive particle, in both languages, in the "intransitive" sentences, in fact, argues that such verbs are entered in the lexicon once, as transitive verbs, and that some process (e.g. detransitivization) can apply to them. This process must operate to derive structures to which the interpretive rules can apply correctly to distinguish between transitive and intransitive sentences.

Jackendoff (1972) proposes the existence of (among others) three semantic functions: CAUSE, CHANGE and BE. CAUSE takes two arguments, an Agent and an event; CHANGE takes three arguments, an individual (Theme), an initial state (Source), and a final state (Goal); and BE takes an individual (the Theme) and a state (the Location). A more complete lexical entry for the transitive *open* is the following:

(68) *open*

$\begin{array}{l} +V \\ +NP^1 \quad \text{NP}^2 \\ \text{CAUSE (NP}^1, \text{ CHANGE (NP}^2, \text{ NOT OPEN, OPEN))} \\ \textit{Agent physical Theme Source Goal} \end{array}$	$\left. \begin{array}{l} \text{morphological (phono. infor,} \\ \text{Subcategorization properties} \\ \text{Grammatical Relations State-} \\ \text{ments} \\ \text{Remaining Semantic properties} \end{array} \right\}$
---	--

The detransitivization process in Italian and Polish begins with a rule which has the effect of blocking the insertion of lexical item in the NP² position for certain transitive verbs. This is a lexical rule which can informally be stated as follows: Insert Δ in NP² position (opt.) for verbs of class V_x. The presence of Δ in the lexical entry triggers a second lexical rule which can be stated as follows:¹¹

(69) NP² → ~CAUSE
 Δ

$\begin{array}{l} \text{verb} \\ \text{NP}^x - (\text{NP}^y) \dots (\text{NP}^z) (\text{PP}) \dots \\ \text{CAUSE (NP}^z, \text{ CHANGE (NP}^y, \dots)) \\ \textit{Agent Theme} \\ \text{"Directional Definition"} \end{array}$	$\left. \begin{array}{l} \text{morphological (phono. infor,} \\ \text{Subcategorization properties} \\ \text{Grammatical Relations State-} \\ \text{ments} \\ \text{Remaining Semantic properties} \end{array} \right\}$
---	--

These terms are referred to at various points in the paper.

¹¹ I have formulated rules (69) and (70) using the symbol "→", but these should not be viewed as rewrite rules (like Phrase Structure rules, for example). Rather they are implicational statements like (66).

This rule in turn triggers a third rule:¹²

(70) ~CAUSE → NP¹ becomes $\left[\begin{array}{l} +\text{Theme} \\ -\text{Agent} \end{array} \right]$

These rules apply to the lexical entries of transitive verbs as follows: Beginning with the entry for *rompere* (*break* Ital.):

(71)*a*

$\begin{array}{l} \text{rompere} \\ +V \\ +NP^1 \quad \text{NP}^2 \\ \text{CAUSE (NP}^1, \text{ CHANGE, (NP}^2, \text{ NOT BROKEN, BROKEN))} \end{array}$	$\left. \begin{array}{l} \textit{Agent physical Theme Source Goal} \end{array} \right\}$
---	--

b Detrans. applies to insert Δ into NP² position

c Rule (69) applies:

$\begin{array}{l} \text{rompere} \\ +V \\ +NP^1 \quad \text{NP}^2 \\ \quad \quad \quad \Delta \\ \text{NP}^1, \text{ CHANGE (NP}^2, \text{ NOT BROKEN, BROKEN)} \\ \textit{agent physical } \Delta \quad \quad \quad \textit{Source Goal} \end{array}$	$\left. \begin{array}{l} \text{morphological (phono. infor,} \\ \text{Subcategorization properties} \\ \text{Grammatical Relations State-} \\ \text{ments} \\ \text{Remaining Semantic properties} \end{array} \right\}$
--	--

d Rule (70) applies:

$\begin{array}{l} \text{rompere} \\ +V \\ +NP^1 \quad \text{NP}^2 \\ \quad \quad \quad \Delta \\ \text{CHANGE NP}^1, \text{ NOT BROKEN, BROKEN} \\ \textit{physical} \left[\begin{array}{l} +\text{Theme} \\ -\text{Agent} \end{array} \right] \quad \quad \quad \textit{Source Goal} \end{array}$	$\left. \begin{array}{l} \text{morphological (phono. infor,} \\ \text{Subcategorization properties} \\ \text{Grammatical Relations State-} \\ \text{ments} \\ \text{Remaining Semantic properties} \end{array} \right\}$
---	--

Thus the process of detransitivization results in lexical entries which can be correctly interpreted in examples like the following:

(72) *La finestra si ruppe.*
The window broke.

The lexical blocking rule applies to modify the subcategorization properties of certain verbs, and the other rules such as (69) and (70) apply to modify the grammatical relations characteristic of these verbs. In these cases, the dictionary definitions of the lexical entries are not affected. The selectional

¹² It is not the case, of course, that all intransitive verbs have non-agentive subjects (e.g. *John rolled down the hill purposely to amuse us*). The fact that the subjects of inchoative sentences are non-agentive may follow from the fact that they are inanimate.

restrictions that apply to sentences like (72) to limit the class of NP subjects in these cases to the class of NP objects in their transitive counterparts are semantic in nature and follow automatically from the modifications of the verbal lexical entries as in (71) above.

Rules (69) and (70) are exactly the rules needed as redundancy rules of type B in English which relate separate lexical entries.¹³ Rule (69) effectively states that intransitive verbs are non-causal, and rule (70) states that the subjects of intransitive verbs are the Theme. This suggests that the theory must provide a mechanism for relating separate lexical entries and for modifying single lexical entries. It appears that there is a universal set of rules that can be used by individual languages as either processes or as statements of relations.

The meaning differences between the verbs in these examples, in their transitive and intransitive uses, in terms of "dictionary definition" is negligible. In fact, all meaning differences can probably be accounted for as resulting from the application of rules (69) and (70). This is not always the case with detransitive verbs. Some examples, in which verbs used transitively differed significantly in meaning from their intransitive (reflexive) uses, were discussed in Section 1, and are repeated here for the sake of convenience:¹⁴

- (64)*a* Luigi si e'alzato alle cinque.
Louis got up at five o'clock.
b Luigi ha alzato la macchina da scrivere.
Louis lifted the typewriter.
- (73)*a* Marek rozbił się.
Mark had an accident.
b Marek rozbił wazon.
Mark broke the vase in pieces.
c Marek zachował się fatalnie.
Mark behaved terribly.
d Jan zachował pamięć o ojcu.
Jan preserved the memory of his father.

These examples have all of the syntactic characteristics of detransitized verbs which do not differ significantly in meaning from their transitive counterparts, and should therefore be analyzed as being derived by means of the same process. This means that these verbs should also be listed in the lexicon in

¹³ For English, type B rules like (69) and (70) may be viewed as general principles dictating which information may or may not be copied into one lexical entry from another by the type A rules.

¹⁴ These cases may be limited in number, but they exist and must be accounted for.

single lexical entries. If this is the case, then lexical entries must be allowed to contain two (or more) "dictionary definitions" which may be only distantly related, or not related at all. This is illustrated below:

- (74) $\left[\begin{array}{l} \text{alzare} \\ +V \\ +NP^1 \text{ } \underline{\quad} \text{ } NP^2 \\ \text{CAUSE (NP}^1, \text{ CHANGE (NP}^2, \text{ POSITION}_1, \text{ POSITION}_2)) \\ a \text{ change position of NP}^2 \text{ from lower to higher position} \\ b \text{ get out of bed (after sleeping)} \end{array} \right]$

Now, another type of rule is necessary to choose meaning *b* just in case the detransitivization rule has applied to insert *A* into the NP² position.

Obviously, there must be some restriction on assigning words with different meanings to a single lexical entry. Various proposals have been made for dealing with the problem of meaning and the organization of the lexicon, and I will not comment on any of them here. I will propose, however, that at least these cases, can be restricted by the following principle, stated in the introduction as Hypothesis (C):

- (C) Homophonous morphemes, not resulting from phonological change, are entered in the lexicon as single entries, regardless of meaning differences, if they are transparently related by the syntax.

The process of detransitivization creates a widespread syntactic pattern that manifests itself clearly at the surface structure level in the form of the correlation between transitive verbs and reflexive intransitive verbs on the one hand, and the lack of corresponding reflexive forms for verbs that are only intransitive.

In conclusion, I have examined in this section certain implications of the syntactic analysis presented in Section 1 for the structure and organization of the lexicon within the framework of interpretive semantics, and have shown that the lexical component of the grammar must contain rules that relate separate lexical entries in some languages (English), and operate on single lexical entries to modify them in other languages. The syntactic behaviour of certain verb classes in Polish and Italian shows the necessity of allowing single lexical entries to contain more than one dictionary meaning. The conditions under which this is necessary imply that semantic information alone is not sufficient to determine the organization of the lexicon, and that morphological and syntactic properties of lexical items play a crucial role, and in fact can override semantic considerations. (The syntactic pattern spoken about above is only transparent because of the morphological identity of the transitive and "intransitive" reflexive verb pairs).

The rules which modify lexical entries in Italian and Polish may be viewed as mediating between the output of the lexico-syntactic component of the

grammar and the input to the semantic component, in much the same way as phonological readjustment rules modify the output of the lexico-syntactic component so that it can be operated upon by the rules of the phonological component.

Throughout Section 2, I made use of highly simplified lexical entries which by no means included all of the information necessary for complete interpretation. My purpose throughout has been to outline a complex problem and suggest some solutions to it that will stand or fall depending on the results of further research.

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