Questions on Fodor's three reasons for not deriving *kill* from *cause to die*

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0. J.A. Fodor has suggested three reasons for not deriving *kill* from *cause to die*. A close investigation, however, reveals that two of them are not strong enough to refute the derivation. What is more, the third one,(1) which seems to be the only possible reason in his argument, is also insufficient to maintain his claim that no transitive sentence contains an intransitive sentence in its underlying structure. But in his third reason we see some syntactic facts which, together with some other data as will be seen later, can be interpreted to suggest interesting and important evidence against the undesirable derivation of *kill* from *cause to die*.

1. Now let us begin with a brief explanation of how the derivational process of a transitive sentence is motivated.

First, consider the following sentences.

(1-1) Frank melted the lead and *it* surprised me.
(1-2) Frank melted the lead though it surprised us that he was able to bring *it* about.
(1-3) Frank melted the lead though it surprised us that it would *do so*.

All the italicized pro-forms in the sentences above are taken to suggest that an intransitive structure underlies the preceding transitive sen-

(1) This is in fact the first reason in Fodor (1970).

tence ;[2] that is,

(1–4) Frank melted the lead

is derived from

(1–5) (Frank caused (the lead melt)).

This derivation involves two basic transformations: *predicate raising,* which moves a predicate in an embedded sentence up into the position of higher VP in a matrix sentence, and *lexicalization,* which combines the two predicates into a single transitive verb. It has been observed that these two rules are also preserved in many other derivations like *stop/cause to stop, move/cause to move, walk/cause to walk,* etc. Furthermore, they can operate even on derivations such as *kill/cause to die,* in which the resultant phonetic form of *lexicalization* has no resemblance to its input form.

2. Against these derivations with the rules of *predicate raising* and *lexicalization,* Fodor gives three reasons, two of which are concerned with the behavior of adverbials[3] in base structure.

A derivational problem observed in both (2–1) and (2–2) is the evidence for his first reason.

(2–1) (i) (Frank (caused ($_S$ the lead melt *today*))) (by (Frank heated the lead *yesterday*))

(ii) Frank caused the lead to melt *today* by heating it *yesterday.*

(iii)*Frank melted the lead *today* by heating it *yesterday.*

(2–2) (i) (Frank (caused ($_S$ the bear die *today*))) (by (Frank gave it a poisonous dose yesterday))

(ii) Frank caused the bear to die *today* by giving it

(2) The pronoun *it* in (1–1) is ambiguous in two ways. It refers to both the whole structure and the embedded structure of the preceding sentence. The reference to the whole structure is not considered here.

(3) *Adverbial* is a term used here as to comprehend adverbial clauses, adverbial phrases and single adverbs.

a poisonous dose *yesterday*.

(iii)*Frank killed the bear *today* by giving it a poisonous dose *yesterday*.

Notice first that, in either case of (2-1) or (2-2), the structure (i), which underlies (ii), has a superflous power to produce an unacceptable sentence (iii) through *predicate raising* and *lexicalization*. In order to block this undesirable derivation, one may suggest a condition that two time adverbs, if they occur in a single transitive sentence (see (1-4)), should denote the same time, or more simply you can state that more than one adverbial should not occur there. This condition leads us to the idea that the transitive verbs such as *kill* (or *melt*) are different in behavior from *cause to die* (or *cause to melt*$_{intrans.}$). It is reasonable, therefore, that Fodor claims that some transitive verbs should have features which permit no temporal gap between the initial and the terminal stages of an event, while the phrase *cause to do* has features which indicate the gap.

The derivational problem shown in the following examples is Fodor's another evidence against *kill/cause to die*.

(2-3) (i) (Frank caused (Mary die)) (by (Frank plunged a knife into Mary's breast))

(ii) (Frank caused (Mary die)) (by (Mary plunged a knife into Mary's breast))

(iii) Frank caused Mary to die by plunging a knife into her breast.

(iv) Frank killed Mary by plunging a knife into her breast.

(2-4) (i) (The guard caused (the prisoners march)) (the guard was willing)

(ii) (The guard caused (the prisoners march)) (the prisoners were willing)

(iii) The guard caused the prisoners to march willingly.

(iv) The guard marched the prisoners willingly.

It is no doubt that in both (2–3) and (2–4) the sentence (iii), which is ambiguous, is obtained by applying *predicate raising* and *lexicalization* to either (i) or (ii). Theoretically, the rules also operate on either (i) or (ii) and produce (iv). The fact is, however, that (iv) is unambiguous and the only possible base is (i). It means that *kill* (or *melt*) in (iv) and *cause to die* (or *cause to melt*) in (iii) are not the different surface representations with the same process of derivation. They are different in both surface and deep structures. This corresponds to a syntactic fact that an instrumental adverbial or a kind of manner adverbials shares a subject with a verb which it modifies.

These two arguments of Fodor's with the examples of (2–1) (2–2) and (2–3) (2–4) have been, *prima facie*, well motivated and there seems to be no question about them. But there lies a basic difficulty in those arguments. He notes in his introductory section that a transitive verb differs from *cause* only in that the former, unlike the latter, involves some features of its corresponding intransitive verb. Originally this note is provided for his explanation that "*predicate raising* and *lexicalization* operate not on phrases but on abstract semantic representation,"(4) but it clearly suggests his belief that there is no difference left other than the features of an intransitive verb.

Remember, however, that Lakoff (1970a) has presented some important features which serve to distinguish the two verbs. They are (+Pro) and (−Pro), and they are supposed to underly *kill* (or *melt* $_{trans.}$) and *cause* respectively. Since the feature (+Pro) denotes a condition that any VP having this feature can not be realized without being replaced by another verb containing the feature (−Pro), *kill* is no longer an alternative representation of *cause to die*. It is no wonder, therefore, that "we can have two time modifiers on ((Floyd (caused (the glass to melt on Sunday))) (by (heating it on Saturday))) simply because there are two verbs capable of receiving them," and "there is

(4) Fodor (1970), Note 3 on p. 430.

only one verb available for modification in *Floyd melted the glass.*"[5] Nor is it necessary to assume that "either we must resist the temptation to lexicalize structures like ((Floyd caused it (the glass melt on Sunday)) (by ($_{adv.}$ Floyd heat the glass on Saturday))) or we must specify ad hoc that *lexicalization* goes through only when certain identity conditions are satisfied by any time adverbs."[5]

It is worth noticing here that the assignment of (+Pro) to verbs does not solve the problem presented by Fodor in (2-1) and (2-2). Even on the structure of (2-5) (i) or (ii) below where the verb *cause* is replaced by a bundle of features such as (+Pro, +Cause, ...), *predicate raising* and *lexicalization* operate freely, and produce an ungrammatical sentence. Compare (2-5) (i) and (ii) with (2-1) (i) and (2-2) (i) above.

(2-5) (i) (Frank $\begin{Bmatrix}+\text{Pro}\\+\text{Cause}\end{Bmatrix}$ ($_{s}$ the lead melt today)))
(by (Frank heat the lead yesterday))

(ii) (Frank $\begin{Bmatrix}+\text{Pro}\\+\text{Cause}\end{Bmatrix}$ ($_{s}$ the bear die today)))
(by (Frank gave it a poisonous dose yesterday))

The only way to block these unacceptable derivations is to set a condition that no predicate is raised to upper VP if the predicate is located in an embedded structure containing an adverbial. Since we have an adverb *today* in both embedded structures, (2-5) (i) and (ii) do not produce (2-1) (iii) and (2-2) (iii) respectively. But the problem is that the condition is too strong: it blocks all the acceptable derivations of (i) from (ii) in (2-6), (2-7) and (2-8).

(2-6) (i) John ran the horse in the field.
(ii) (John caused (the horse ran *in the field*))

(2-7) (i) John failed almost half of the students during this

(5) *Ibid.*, p. 437.

semester.

(ii) (John caused (almost half of the students failed *during this semester*))

(2-8) (i) Frank slowly sailed the boat on the lake.

(ii) (Frank caused (the boat *slowly* sailed on the lake))

Thus we need, in spite of Fodor's advice,[6] to adopt a principle to distinguish adverbials of Neg, Place, Time, Manner, Frequency and Direction as a class of α adverbials from all others[7] so that we can assert that it is only on the structure containing this type of α adverbials that *predicate raising* and *lexicalization* operate. This principle clearly shows why (b) is unacceptable in (2-9) and different from (a) in its semantic interpretation in (2-10).

(2-9) (i) a. The boy walked on crutches.

b. *Frank walked the boy on crutches.

(ii) a. Frank burned the rubbish in a hurry.

b. *The rubbish burned in a hurry.

(iii) a. Frank killed the pig for meat.

b. *The pig died for meat.

(2-10) (i) a. Fortunately, the ice did not break.

b. Fortunately, Frank did not break the ice.

(ii) a. The prisoners carelessly marched to the river.

b. The guard carelessly marched the prisoners to the river.

(iii) a. The children swam in the river for exercise.

b. John swam the children in the river for exercise.

The assertion that *predicate raising* and *lexicalization* operate on a structure containing an α adverbial can be simplified by repeating

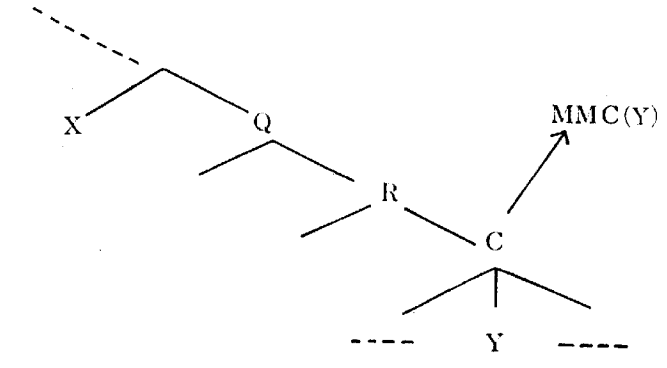
(6) It states that "the enumeration of adverbials which permits *predicate raising* and *lexicalization* is the game which is not worth candle." (p. 436).

(7) See Sugawara (1971).

the theme we have mentioned just before: the rules are applied only to an embedded structure that has no adverbial in it. All the adverbials that actually exist in an embedded sentence must, therefore, be extracted before the application of *predicate raising* and *lexicalization.* Structures which do not meet this condition are simply outside the sphere of these rules.

The condition discussed above can also be stated in another way. Recently Chomsky has proposed *subjacency condition* for extraction rules.[8] Let us follow him, and say that no *predicate raising* is applicable if the predicate to be extracted in the embedded structure is not subjacent to a node into which it is to be transported.[9] In Chomsky (1971, 24), *subjacency* is defined in such a way that Y is said to be subjacent to X if and only if X is superior to Y and there is at most one cyclic category Q such that Q L-contains[10] MMC(Y)[11] and Q does not contain X. The subjacency is diagrammatically shown in the following tree, in which Q, R and C are all cyclic categories. See that Y is subjacent to X here.

(F—1)



Let us call it the condition *CPR* (*C*ondition of *P*redicate *R*aising) for convenience' sake.

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(8) Chomsky (1971).

(9) It is interesting to see that a condition proposed with an idea to enlarge the base and restrict the range of derivation is applicable to the opposite idea.

(10) "Category Q is said to L-contain category MMC(Y) if Q contains R and R contains MMC(Y), where Q is not identical with R nor is R identical with MMC (Y)." (Chomsky, 1971).

(11) MMC(Y) means a minimal major category containing Y. (*Ibid.*)

Now we have seen that *adverbial transportation*[12] is presupposed in *predicate raising*. The next question is to ask what sort of rules is required to make *adverbial transportation* possible. Consider the following rules that I proposed in my paper (1971):

$$\text{(R-1)}\quad \underset{1}{X} - \underset{2}{\left\{\begin{matrix}+\text{Adv}\\ +\alpha\end{matrix}\right\}} - \underset{3}{D} \Rightarrow 1 - 2 - \underset{3}{\left\{\begin{matrix}+\text{D}\\ +\text{Adv}\\ +\alpha\end{matrix}\right\}}$$

$$\text{(R-2)}\quad 1 - 2 - 3 - \Rightarrow 1 - \phi - 3$$

where: (1) D is the only element that is dominated by the highest VP in the structure, and

(2) α is a feature assigned to a particular kind of adverbials (mentioned above).

An important condition here is a constraint that no *adverbial transportation* operates on a structure if an adverbial to be extracted is not under the rightmost category among those dominated by NP, whose corresponding VP directly dominates D. More simply the condition states that there should be no Y such that a category which dominates Y also dominates an adverbial to be raised. In other words, the rule (R-1) shows no Y between 2 and 3. No rule thus applies to (2-11).

$$\text{(2-11)}\quad \left(_{S}\ \left(_{NP}\ \underset{1}{X} - \underset{2}{\left\{\begin{matrix}+\text{Adv}\\ +\alpha\end{matrix}\right\}} - Y\ \right)\left(_{VP}\ \underset{3}{D}\ \right)$$

Since this is the *c*ondition of *a*dverbial *t*ransportation we tentatively call it the constraint *CAT*.

The two conditions of *CPR* and *CAT* are powerful enough to solve all the problems pointed out by Fodor in his arguments concerning the

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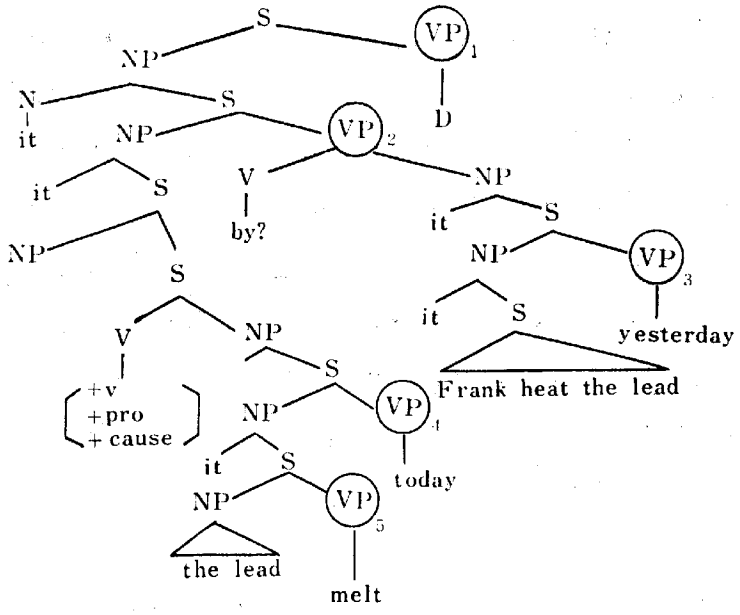
(12) The term was originally given by Sugawara (1971) for a syntactic phenomenon where an adverbial in an embedded structure moves up to the position of matrix VP. The fact that the matrix VP dominates adverbials is proved by Lakoff (1970a).

behavior of adverbials. See the structure (2–1) (i), which is shown below as (2–12), and its tree in (F–2).

(2–12) (Frank (caused ($_S$ the lead melt *today*)))
(by (Frank heated the lead *yesterday*))

(F–2)



This structure produces *Frank caused the lead to melt today by heating it yesterday* (2–1) (ii), but not **Frank melted the lead today by heating it yesterday* (2–1) (iii). This does not necessarily mean that $melt_{trans.}$ has no underlying form of $cause\ to\ melt_{intrans.}$. But rather it should be understood that the derivation is blocked. Notice that the predicate raising of *melt* (the circled VP_5 in F–2) is blocked by CPR, and moreover CAT prevents *today* (VP_4) from moving up into D (VP_1) since VP_2 functions as Y in (2–11). VP_3, which has $\begin{bmatrix}+\text{Adv}\\+\alpha\end{bmatrix}$, can of course move up to VP_1 but remember that the transportation has irrelevant to this argument here.(13)

Consider next the two structures in (2–3), which are given as (2–13) (i) and (ii) below.

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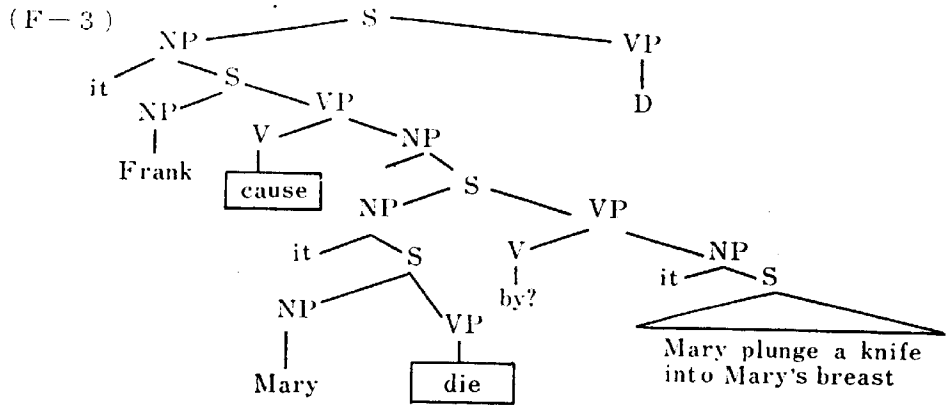
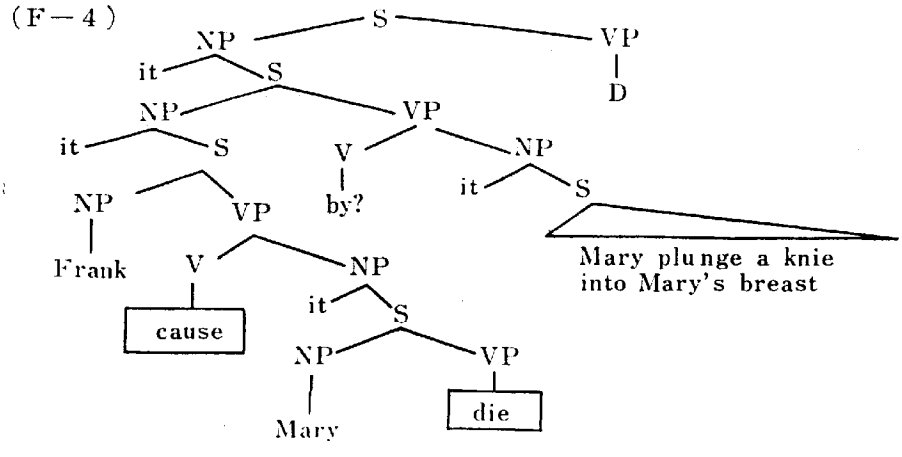
(13) VP_2 can also be regarded as an adverbial phrase, but since it has a feature of non-α adverbial the phrase does not move upwards.

(2–13) (i) (Frank caused (Mary die)) (by (Frank plunged a knife into Mary's breast))

(ii) (Frank caused (Mary die)) (by (Mary plunged a knife into Mary's breat))

Prima facie, both structures appear to permit *predicate raising* and produce *Frank killed Mary by plunging a knife into her breast* (2–3) (iv) since either of these structures has no adverbial in the embedded sentence, (Mary die). But the following trees clearly show that it is only (F–4) that permit the raising of |*die*| to the position of |*cause*| and produce the sentence. CPR and CAT have no function to block the derivation there. On the other hand, (F–3), which is the underlying form of *Frank caused Mary to die by plunging a knife into her own breast,* cannot simultaneously be the base of *kill*-sentence (2–3) (iv). It is only because that *die* is not subjacent to *cause* there.





3. It is now clear that all the arguments we have made in the preceding section will lead us to believe that the relation of verbs to adverbials is no longer the counterevidence of *kill/cause to die* nor *melt/cause to melt.* Let us consider next the third reason presented by Fodor.[14]

(3–1) (i) Frank melted the lead and it surprised us that it *did so.*
(ii) *Frank killed the bear and it surprised us that it *did so.*

As we have seen in Section 1, the pro-form *do so* in (3–1) (i) implies the existence of an intransitive verb *melt* underlying the preceding transitive sentence since the second *it* refers to *the lead.* This is a source of the hypothesis that an anaphoric pro-form is derived by transformational rules from the base of an antecedent sentence to which the pro-form refers to.[15] But we have another sentence here that implies counterevidence of the hypothesis. *Did so* in the sentence (3–1) (ii) does not refer to *die* which is supposed to underly the verb *kill.* Nevertheless you can preserve the hypothesis if you adopt a condition on the order of rules: no *do so* transformation should be applied before *predicate raising* and *lexicalization.* The new order makes us possible to keep the derivation of *kill/cause to die* and what is more to exclude (3–1) (ii) since the *do so* rule does not function there. But we should notice that the same order also excludes the permissible derivation of *melt* in (3–1) (i). This means that the derivation of *kill* is not parallel to that of *melt.* It is clear that Fodor based his third reason on this type of unparallelism.

One might be tempted to say, however, that this unparallelism can be transcended by a variety of similarity in some other points. In fact, as is suggested in Lakoff (1970a),[16] *kill* has the same lexical meaning as

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(14) See note 1.
(15) Lakoff (1970b), p. 146.
(16) See Sugawara, "Kill/cause to die をめぐって" (forthcoming).

die, just as $melt_{trans.}$ has identical meaning with $melt_{intrans.}$[17] Furthermore, the derivation of *kill* involves the same rules of transformation as does the derivation of *melt*. It seem reasonable, therefore, to claim that *kill* has *die* in its underlying form even if *kill*, unlike $melt_{trans.}$, cannot be referred to by *do so* as we have seen in (3–1) (ii).

But it should be noticed that the semantic similarity between a transitive verb and its intransitive counterpart does not necessarily show that the former involves the latter as an embedded element. The same may be said of the similarity of derivation between *kill* and *melt*. The similarity can be possible evidence of parallelism but it does not prescribe the base of *kill* by itself. Thus the only ground left for the base of *kill* lies in the assertion that $melt_{trans.}$ has an intransitive counterpart in its base. Now if the assertion is well motivated by syntactic evidence, we may have no problem in deciding the base of *kill*. But can it be justified? Notice that the base of $melt_{trans.}$ is clarified mainly through the use of pro-forms as was seen in the examples of (1–1), (1–2) and (1–3), and the use of those pro-forms is not always and necessarily related to the decision of the base structure.

Consider the sentences given below.

(3–2) (i) John slices salami with a knife but I use a cleaver to *do so*.

(ii) Nixon won in 1968, but *it* won't happen in 1972.

Both the sentences above are given by Lakoff to show how valid the use of pro-forms in deciding the base. In either case of (i) or (ii), the pro-form neatly refers back to part of the base in the preceding

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(17) See the remarks below, which are given by Lakoff (1970a).
"*Kill* means 'to cause (someone) to die'. Thus, we can look upon *kill* as having the same lexical meaning as *die*." (p. 98) "The sentence (*the dog was dead*) is synonymous with the ... *become* sentence (*the dog became dead*). Thus, it would be quite reasonable to expect the deep structure, perhaps even identical, up to lexical items." (p. 33).

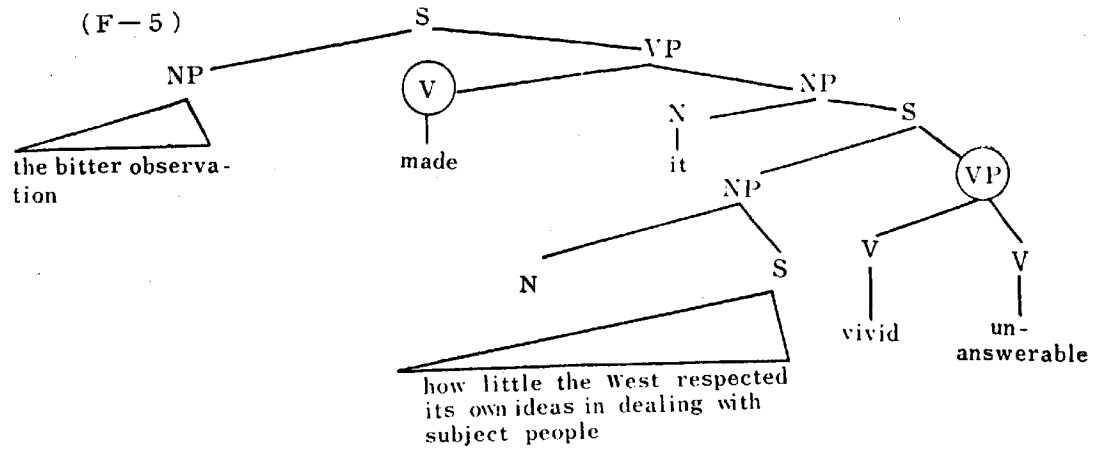
sentence. *Slice salami* is the part in (i), and in (ii) it is *Nixon win.* It is thus conceivable that Lakoff goes so far as to say that adverbials such as those in (i) and (ii) above do not share a single node of VP with the verbs they modify. So far so good. But how can we interpret the fact that in English there occur a lot of pro-forms which do not exactly refer to a constituent structure of the preceding sentence, and which give us no formal or behavioral clue to distinguish them from all others such as used by Lakoff? Let me introduce two of them here.

(3–3) (i) John married Mary and we surprised to see that she *did so* with great pleasure. (Fodor)

(ii) The bitter observation made vivid, unanswerable in a way which rage could not have *done*, how little the West respect its own ideals in dealing with subject people. (Baldwin)

The first example indicates that *did so* does not refer to the base of *John married Mary* unless the base structure is interpreted to have an embedded sentence *Mary married John.* As to this type of *do so* behavior, one can set a condition such that no pro-form is derived from any part of the base structure underlying the preceding sentence if and only if the base involves a symmetry verb as the main verb. Then where does *do so* come from? The condition does not provide any solution.

Done in the second example above (3–3) (ii) presents another problem. It corresponds to (*make* (*vivid, unswerable*)), which is evidently a constituent of the preceding sentence. But remember that the constituent is not a unit of the base structure. It is a derived unit after certain transformations. This means that *done* does not refer to any part of the base structure, hence it is irrelevant to the argument of the base construction. See (F–5) below.



Moreover, it is true that there has been no proposal in which *make* and *vivid-unanswerable* are tied together so that they may form a single unit in the base structure. One may claim, however, that it is only in the example with such an unusually complex structure that a pro-form can refer to a non-consitituent structure of the base. But such a claim is untenable, since (3–3) (ii) is not the only example. There are lots of sentences which contain such type of pro-forms. Any sentence which has a pro-form referring to some non-contiguous units can be available as evidence here.

Another set of examples given below will also be used as evidence in preserving our position discussed so far.

(3–4) (i) a. *John proved himself worthy of our confidence* and *that* was enough to make us believe that he was not guilty.

b. *His proof that he himself is worthy of our confidence* was enough to make us believe that he was not guilty.

c. **His proving that he himself is worthy of confidence* was enough to make us believe that he was not guilty.

(ii) a. *George proposed to pool a part of what they had earned,* but nobody accepted *it.*

b. They did not accept *his proposal to pool a part of what they had earned.*

c. *They did not accept *his proposing to pool a part of what they had earned.*

(iii) a. *Jane believed me insane,* but it is certain that she now has discarded *it.*

b. It is certain that now she has discarded *her belief of my insanity.*

c. *It is certain that now she has discarded *her believing me insane.*

In all the examples of (3–4), the pro-form *that* or *it* in (a) can be derived from the base of the italicized part in (b), a *derived nominal* (to use the term in Chomsky (1970)). In other words, the pro-form refers to the underlined phrase in (b). As is shown in (c), the italicized part (a *gerundive nominal,* also the term in Chomsky (1970)) cannot be referred to by the pro-form in (a). Notice now that (b) is not equivalent to (c), and therefore (b) does not share the base structure with (c).

This can be an additional piece of evidence to Chomsky's assertion: gerundive and derived nominals are not the output forms of the same base structure. A question may be raised then: which is the one that is derived from the base of a sentential construction? If it is the derived nominal, then all the pro-forms in (a) have now no difficulty in referring back to the sentential construction of the base, and we have to throw all these examples away. But it is too high a price to pay for accepting the solution. Notice that the solution also suggests that gerundive nominals are not derived from the sentential construction, although they are closer to sentence than derived nominals in that the former take aspects like sentences do and are freely formed from sentences, while the latter take no aspect and have strict constraints in the derivation from sentences. In addition, derived nominals take adjectives, articles and demonstrative pronouns, which are not attributes of gerundive nominals.[18] It would, therefore, be reasonable to claim that the pro-form in (a) does not refer to the structure in the preceding sentence, nor is it derived from it.

If the arguments in the preceding paragraphs could successfully

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(18) See Chomsky (1970) and Wasow-Roeper (1972).

prove the weakness of using pro-forms, the proposal of deriving *melt* from *cause to melt* can consequently be said to have insufficient evidence. This means the untenability of the base structure underlying *kill* and hence the derivation *kill/cause to die.*

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