

To be and not to be
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To be deletion is at first glance a simple drudge of a transformation, relating sentences like (1a) and (1b) below.

- (1) a. I consider Harriet coarse and unfeeling.
- b. I consider Harriet to be coarse and unfeeling.

Since it is difficult to see why verbs like declare, consider, feel and expect should govern to be deletion, while verbs like state, know, hear and intend do not, it is understandable that Stockwell, Schachter and Partee should conclude that "the predicates which allow or require this deletion must be marked with the exception feature [+to-be-del]". However, not even an ad hoc marking on individual lexical items will predict when to be deletion is appropriate and when it is not; the pairs of sentences in (2) and (3) illustrate both appropriate and non-appropriate application of to be deletion governed by the same matrix verb.

- (2) a. When Tom got home, he noticed the front door missing.
- b. ?After careful study, Tom noticed our basic premise weak.
- (3) a. I find Sam appealing.
- b. ?I find Sam amusing to Charlie.

The purpose of this paper is to explore the semantics of a rule whose existence is uncontroversial, whose syntactic functioning is trivial to state, and whose relation to meaning is of the kind that has often been dismissed as "stylistic". Although it is not clear that one set of generalizations will hold for every single class of verbs that allow to be deletion, it will be shown that to be deletion operates similarly to the infinitive formation that precedes it, in that in both cases syntactic disintegration of an embedded underlying clause parallels a semantic movement from an empirically oriented or discourse given proposition toward a matter of personal experience, individual perception, or a conventionally determined state of affairs. Whether this observation is to be stated as a generalization about verbs allowing infinitives and to be deletion, or as a generalization about the relative syntactic integrity of certain types of complements is one of the questions that will be raised here.

One group of verbs that allow to be deletion includes the cognitive perception verbs think, feel, believe, find, consider, and deem. Although most of these verbs may function in several different senses, as members of the cognitive perception class allowing to be deletion they are nonfactive, stative, and are used to describe one person's unique and original judgment, opinion or intellectual perception. For instance, although believe can be used to describe the acceptance of the truth of a proposition already formed by someone else, as in (4), this sense does not occur with infinitives nor (consequently) does

it delete to be.

- (4) a. The doctor has told Sam that Mary has leukemia, but Sam won't believe that she's sick.
 b. *The doctor has told Sam that Mary has leukemia, but Sam won't believe her (to be) sick.

When believe is used to express a conjecture as to the truth of a proposition concerning empirically verifiable matters of fact, as in (5), it is less widely accepted with infinitives and is out with to be deletion;

- (5) a. Why, I believe that Tom is Italian after all.
 b. %Why, I believe Tom to be Italian after all.
 c. *Why, I believe Tom Italian after all.

and when believe is used to express a strong faith in the truth of a principle, as in (6), it occurs with an infinitive but is less good with to be deletion.

- (6) a. Calvinists believe sex to be evil.
 b. ?Calvinists believe sex evil.

It is only when believe is used in a sense close to that of consider as describing an individually formed reaction or opinion, that it can occur with to be deletion.

- (7) %A lot of people consider Judge Doily to be a hack, but I believe him honorable and just.

The facts are similar with find; as a semifactive verb embedding propositions about empirically verifiable, either-or matters of fact, it is most at home with that clauses and its to be deletion behavior is quite strictly limited.

- (8) a. I bet that if you look in the files, you'll find that she is Mexican.
 b. %I bet that if you look in the files, you'll find her to be Mexican.
 c. *I bet that if you look in the files, you'll find her Mexican.

As a nonfactive verb describing a personal experience, however, find embeds infinitives with and without to be:

- (9) I find Harry (to be) terribly amusing, although others think he's a bore.

The subtle and not-so-subtle differences in meaning between sentences with that clauses and similar sentences with infinitives have been noticed before; in this paper I will concentrate on differences often parallel to these, between infinitives with and without to be deletion. For the cognitive perception class, such differences have to do with the egocentric coloring of a proposition and the relative directness of experience used as evidence for it. For instance, although find and an embedded proposition always implies some sort of personal experience as evidence for

the proposition, with infinitives, this experience is more direct than with that clauses. When find occurs with to be deletion the experience must be even more direct; the sentence becomes more of a report of an experience than the stating of a fact based on experience. I would use (10a) but probably not (10b) and certainly not (10c) if I have just searched through my files to find out about consumer reaction tests:

- (10) a. I find that this chair is uncomfortable.
 b. I find this chair to be uncomfortable.
 c. I find this chair uncomfortable

I would use (10b) but not (10c) if I have run consumer reaction tests myself and am reporting on my findings; to use (10c), however, I must have experienced the chair as uncomfortable.

Although consider always describes a subjective judgment rather than a state of belief with regard to an empirically falsifiable matter of fact, the example in (11), which I owe to Michael Szamosi, shows consider with to be being more appropriate in a situation where a proposition is regarded from the standpoint of truth or falsity:

- (11) I just found out that Sally isn't related to me at all,
 and it surprises me because I always considered her
 {to be my sister}.
 {?my sister}

In contrast, the version without to be is more appropriate in (12), suggested to me by Arlene Berman, since consider here describes my feelings toward and treatment of another person, and the proposition involved has nothing to do with a literal matter of fact.

- (12) I always considered him {part of the furniture
 {?to be part of the furniture}}.

Deem always describes subjectively formed value judgments rather than embedding propositions whose validity has some independence outside of one person's perceptions, and I think that this is why for some people to be deletion is required with deem. For those who can use think in a sense similar to deem, think acts similarly:

- (13) Mrs. Searle {deems
 {?thinks}} her teacups {worthless
 {?broken}}, although in
 my opinion they are only slightly cracked.

When they embed that clauses, members of another class of verbs which I will refer to as sensory-based perception verbs express an awareness of a fact about the external world usually through a direct physical perception. The "hard-core" sensory perception verbs see, hear, feel, taste, smell and perceive differ in interesting and complicated ways when they embed infinitives--so interesting and so complicated, in fact, that even a minimally probing discussion of them is beyond the scope of this paper. Consequently, I am going to assume here that to be deletion is not involved in (14), although this is not obvious and

grammarians have analyzed these constructions in different ways.

- (14) Marilyn $\left\{ \begin{array}{l} \text{heard} \\ \text{saw} \\ \text{smelled} \end{array} \right\}$ John burning the traffic tickets.

I will limit the discussion to such verbs as notice, discover, find, sense and perceive when they describe an intellectual awareness on the basis of a sensory perception, as in (2a) and (15),

- (15) Although nobody mentioned the old rules, I sensed them still in effect when Ralph refused to lend me his pencil.

and I will avoid discussing them when they are used in constructions like (16) and (17), in which no intellectual awareness is necessarily involved.

- (16) What Max discovered actually was the leaves (*to be) burning.

- (17) Lila sensed the wind (*to be) quickening, but she thought it was the boat going faster.

Acknowledging the limits I have placed on the discussion, then, what can be said about to be deletion with the remaining verbs? One observation is that if these verbs involve both sensory perception and cognition, cognition is most important with that clauses, less important with full infinitives, and least important with infinitives without to be. The earlier examples in (2) are pertinent to this discussion; it takes a comparatively complicated chain of reasoning to conclude that a basic premise is wrong, and so in (2b) to be deletion is not appropriate. Realizing that a front door is missing can result from direct visual evidence and a minimum of conjecture, so in (2a) to be deletion is quite appropriate. The examples in (18) and (19) further illustrate the point that to be deletion is appropriate when what is intellectually registered is closer to a description of what is directly experienced than to a proposition based on conjecture from indirect evidence.

- (18) a. I looked at the crowd and I sensed McGovern losing support.

- b. *I looked at Frank Mankewicz and I sensed McGovern losing support.

- (19) a. In the paper, we noticed $\left\{ \begin{array}{l} \text{that the store was closed} \\ \text{?the store to be closed} \\ \text{*the store closed} \end{array} \right\}$.

- b. When we walked by Monday, we noticed $\left\{ \begin{array}{l} \text{that the store was} \\ \text{the store to be} \\ \text{*the store closed} \end{array} \right\}$.

The examples in (19) further show that the same kinds of considerations bear on the relative acceptability of that clauses and infinitives.

The importance of direct experience with perception verbs is further evidenced by the kind of adjectives that can be juxtaposed with infinitival subjects by to be deletion. When the

predication involves an attribute that is inherent and determinable outside of a particular situation--that is, when the infinitive is thought of as a proposition whose truth is not contingent on a particular experience or on a temporally restricted state of affairs--to be deletion does not occur.¹

- (20) I sensed him {about to get angry}, so I dropped the subject.
 (21) When May got there she found {the ice frozen
 *the forest deciduous}.

The behavior of what I call other world perception verbs (imagine, picture, visualize, remember, recall and recollect) is at least as complicated and mysterious as the sensory perception verbs proper, but a brief survey of them shows their to be deletion behavior to be similar. When the other world perception verbs describe conjured-up, sensory-like mental creations or recreations of a non-actual state of affairs, to be deletion is appropriate; when these verbs embed complements in which the truth of a proposition is at issue, that clauses are common, infinitives are often possible, but to be deletion is not appropriate. Imagine does not delete to be in either a "suppose" sense, as in (22), a strictly counterfactual sense, as in (23), or in the sense of "accept as likely", as in (24).

- (22) I imagine your daughter {to be all grown up now}, Sam.
 (23) Mr. Buffo, the famous olive oil importer, imagines
 6,000 kilos of his olive oil {to be rancid}.
 (24) a. I can't imagine you to be sick enough to see a doctor.
 b. (≠(a)) I can't imagine you sick enough to see a doctor.

Imagine in a sense close to "picture" or "visualize", that is, imagine when it describes a sensory-like experience does delete to be; although (24b) is not good as a comment on the likelihood of your being sick right now, it has a reading something like "I can't picture you as you would be if you were sick enough to see a doctor", and (25), in contrast to (22) without to be, is good:

- (25) I always imagined your daughter tall and sort of gangly.
Although in both (23) and (26), *imagine* is counterfactive, the difference is that (23) is more likely to describe a mistake about a matter of fact, whereas (26) is more likely to describe a delusion that involves sensory experience.

- (26) Miss Snow is really peculiar about her food; she's getting so bad that today she even imagines her olive oil rancid.

Personal experience is important in deleting to be with these verbs also; I could use (27a), for example, if I have only seen Fran's picture in the newspaper, but (27b) would not be appropriate in this context.

- (27) a. I remember Fran to be tall and warty.
 b. I remember Fran tall and warty.

With these verbs, too, the more attributive-like and less factually relevant an adjective is, the more likely its clause is to be shortened by to be deletion.

- (28) I $\left\{ \begin{array}{l} \text{imagine} \\ \text{remember} \end{array} \right\}$ her a $\left\{ \begin{array}{l} \text{happy person} \\ \text{*displaced person} \end{array} \right\}$.

There are many proposition-embedding verbs that do not describe perceptions but rather embed propositions about empirically verifiable matters of fact; some of these verbs involve the establishing of the truth of a proposition through investigation, and in this sense, they do not delete to be:

- (29) The FBI $\left\{ \begin{array}{l} \text{determined} \\ \text{established} \\ \text{confirmed} \\ \text{demonstrated} \\ \text{found} \end{array} \right\}$ the mad bomber $\left\{ \begin{array}{l} \text{to be blond} \\ \text{*blond} \end{array} \right\}$.

However, when these lexical items are used to describe the establishment or reestablishment of a proposition as conventionally valid, as opposed to valid in a world independent of social convention, to be deletion is appropriate:

- (30) The psychiatrist determined Mary insane.
 (31) The jury found the mad bomber guilty on 10 counts.

Similarly, if the truth of the embedded proposition is asserted as a given element in a formal argument or a formal routine that depends on the proposition's status as unquestionable, to be deletion is appropriate in this case, too.

- (32) We've determined Mary present at the scene of the crime.
 (Now I would like to further argue that she assisted in disposing of the body)
 (33) You'll have to demonstrate Tillie able to lift 400 pounds before I'll believe she threw Sam off a moving roller coaster.

Presume, suppose and assume, when used to assert a formal assumption of the truth of their embedded propositions, also allow to be deletion, but not in other senses in which empirical truth is relevant.

- (34) $\left\{ \begin{array}{l} \text{*His mother} \\ \text{The court} \end{array} \right\}$ presumed John innocent until he was proven guilty.
 (35) a. Let's assume Marcia willing to go along. (Even so, we would have a hard time convincing the dwarf)
 b. ?I assume Marcia willing to go along. (What do you think?)

Elect has often been considered as a verb that obligatorily undergoes to be deletion. Since being a holder of an elected office is obviously a purely conventionally determined state of

affairs, and since the people who elect someone to office are the only ones who can accomplish such a state of affairs, elect's to be deletion behavior is consistent with the behavior of other verbs relating individuals to propositions about conventionally determined states of affairs.

There is a group of performative relating verbs that in a sense are double performatives; they always describe an act of communication, and with to be deletion they further imply that the person doing the communicating is also responsible for the conventionally determined state of affairs that he is "publishing". The verbs embedding an infinitive with to be in (36) and (37) below can be interpreted in either the publish meaning alone or the performative meaning and the publish meaning together; but if to be is deleted, they must have both a publish and a performative meaning.

- (36) a. NBC announced Snerd (to be) the winner in its presidential projection poll.
- b. The John Birch Society announced Snerd {to be the winner}
{?the winner}
- in NBC's presidential projection poll.
- (37) a. The judge declared Mary Stultz (to be) insane.
- b. Mrs. Grass declared Mary Stultz to be insane.
- c. ? Mrs. Grass declared Mary Stultz insane.

The makeup of report would seem to be all communication and no (other) performative, yet to be deletion is apparently sensitive to whether the person reporting is an eyewitness to what he's reporting about (in which case report is similar to perception verbs) and to whether or not he's reporting about a matter involving a judgment based on accepted standards, or about an official act (in which case it seems to be kind of a double performative).

- (38) a. Scientists report the sea level down considerably from what it was in 1952.
- b. ?In his science essay, Max reported the sea level down considerably from what it was in 1952.
- (39) a. The UPI reports General Murko's division crossing the Peruvian border.
- b. ?*The UPI reports Martha Raye's entertainment troupe crossing the Peruvian border.

So far, then, we have seen that the tendency for proposition-embedding verbs is that to be is not deleted, and the formation of infinitives by raising a subject to object position in a higher clause is likewise less appropriate, when the content of the embedded clause is viewed as truth-functionally operative in a world outside of human perception and social convention. There are a number of other verbs that I group together as verbs embedding clauses that have to do with potential states of affairs or potential actions. One class of these verbs, which includes want, need, expect, intend, like, hate and prefer, were designated

by Kiparsky and Kiparsky as subject raising "emotives", and a subject raising analysis is extensively motivated for them by Postal (to appear). Another class includes imperative-reporting verbs such as order, command, request, ask and require, whose subject raising status is rather more controversial. Practically no two verbs of any of these two groups form a sub-class whose syntactic behavior is uniform, and furthermore, idiolectal variation with regard to these verbs is rampant. I group them together because they share certain semantic similarities in constructions that seem at least reasonably derivable by to be deletion, although it is not at all clear which NP₁ Verb NP₂ Adjective constructions are to be related by a late rule of to be deletion and which are not.

Unlike infinitives with previously discussed verbs, infinitives embedded under these potential-embedding verbs can contain non-stative verbs, and accordingly, be in such infinitives can be paraphrased as "voluntarily get to be" or "act", as in (40) and (41).

- (40) We need you to be firm when the lawyer examines you.
- (41) The queen requested the prime minister to be married by a rabbi.

To be deletion does not delete these non-stative be's.

- (42) *We need him firm when the lawyer examines him.
- (43) *The queen requested the prime minister married by a rabbi.

This is not all obvious in sentences like (44)

- (44) I want you attentive when the judge questions you.

for it is difficult to see a difference between having become attentive and remaining so during a limited amount of time and acting attentive for a period of time. A similar and also very subtle difference shows up in progressives; Dowty (1972), after Ross (1972), has argued for a distinction between a stative locative progressive and an activity progressive; to be deletion seems to distinguish between them, since although (45a) is ambiguous as to whether I want you to be in the act of standing up or in the state of having stood up, (45b) allows only the stative reading.

- (45) a. I want you to be standing up when the judge arrives.
- b. I want you standing up when the judge arrives.

A familiar constraint on to be deletion is that it does not act with these verbs to juxtapose an NP and an inherent, non-temporally restrictable, unacquirable or unlosable property, as shown in (46) and (47)

- (46) Ari wants the olives {salty }
 {*Greek }.
- (47) Jackie requested the shoes {in a box }
 {*low-heeled }.

A possible exception is a sentence like (48):

- (48) Jane likes her wine French and her men Italian.

although even this construction is more appropriate with adjectives describing experienceable attributes rather than factual labels.

- (49) ?Jane likes her lace Belgian and her chocolate Dutch.

One difference between infinitive clauses acceptable both with and without to be is that in sentences with full infinitives, a greater space of time is implied between the time of the matrix verb and the desired or expected time of realizing the potential state of affairs described in the infinitive. Although I don't regard any of the sentences below as particularly bad, it seems to me that the sentences without to be are more appropriate when immediate action is desired or expected.

- (50) Inspector J. ordered the casket opened {within the hour}
 {?late next fall}.
- (51) a. Quick, get in there! Joanie needs her leg {set
 {?to be set}}.
- b. Joanie needs her leg {to be set}
 {?set} eventually, but let's
 not rush things.

This telescoping of time seems related to the greater stativity of verbs in to be deleted clauses, which is further evidenced by the fact that although the passivized verb in full infinitives embedded under the verbs in question can be regarded as an accomplishment or an activity (in the sense of Vendler (1967) and Dowty (1972)), in to be deleted infinitives, the accomplishment sense is stronger.

- (52) a. ?The queen demanded a torch carried. (activity)
 b. The queen demanded a torch lit. (accomplishment)
- (53) a. I like a poem to be read for a few minutes before I
 fall asleep, but I don't care if you finish it.
 b. ?I like a poem read for a few minutes before I fall
 asleep, but I don't care if you finish it or not.

Green (1971) has pointed out that the surface string NP, Verb NP, Adj., as in They burned her alive and They shot him dead, for example, in which the second NP acts as direct object of the verb, is related to a number of different semantic sources. Verbs that embed clauses describing potential states of affairs also participate in this conspiracy. There are a number of such constructions for which a to be deletion analysis might be argued, although either arguing for or against such an analysis in each discernably different case is much too complicated and difficult a task to undertake here. I would just like to point out some differences in sentences that might reasonably be related by to be deletion although I believe that there are at least equally reasonable grounds against such an analysis and that probably the sentences below should not all be derived identically.

- (54) a. Ma Blum hates gin diluted (?although she doesn't drink it)
- b. Ma Blum hates gin to be diluted (although she doesn't drink it)
- (55) a. The FBI wants Frank alive (?even if they never catch him)
- b. The FBI wants Frank to be alive (even if they never catch him)
- (56) a. Frank likes Mary fat (?even though he only talks to her on the telephone)
- b. Frank likes Mary to be fat (even though he only talks to her on the telephone)
- (57) a. The last customer ordered his coffee black.
- b. ?The last customer ordered his coffee to be black.
- (58) a. Din Ho requested Mary's poison in tablet form.
- b. Din Ho requested Mary's poison to be in tablet form.

The (a) sentences in (54) - (58) differ from the sentences with full infinitives in that some kind of receiving, possessing or experiencing of the superficial direct object is implied in the (a) sentences, while no such presupposition is present in the (b) sentences. Whether the differences in the sentences above are to be treated in the same way as the differences related to directness of experience observed in other classes of verbs, the (a) and (b) sentences being derived from the same underlying forms, or whether the differences between the (a) and (b) sentences result from differing lexical composition of the verbs, for example, is an important problem that I will leave untouched. I do believe, however, that even if none of the sentences in (54) - (58) are related by a late application of to be deletion, the differences I have pointed out are at least relevant to the differences in sentences with surface constructions like these that are in fact related by to be deletion.

As has often been observed, among the non-performative potential-embedding verbs, want and expect can be used to convey or report requests. When they are so used, they occur with both full or to be deleted infinitives, but the to be deleted alternatives often seem to convey or relate a sharp order rather than an expressed desire or expectation that may or may not be taken as a request.

- (59) a. I $\left\{ \begin{smallmatrix} \text{want} \\ \text{expect} \end{smallmatrix} \right\}$ this man dead by noon.
- b. I $\left\{ \begin{smallmatrix} \text{want} \\ \text{expect} \end{smallmatrix} \right\}$ this man to be dead by noon.
- (60) a. When I come back, I want it raining in the studio.
- b. When I come back, I want it to be raining in the studio.

(59a) is likely to be used to convey an order, while (59b) might express a desire for a state of affairs without anyone being called on to bring it about. (60a) can only be interpreted as an order and so the most normal context for it is a situation in which artificial rain is called for. I suspect that the stronger imperative feeling with to be deletion grows out of the time telescoping differences noted earlier and the fact that to be

deletion with potential embedding verbs involves accomplishments and finished changes of state instead of activities and ongoing processes, and changeable, temporally restricted properties instead of inherent, non-temporary ones. Sometimes not change in a particular entity but choice among entities provides the necessary varying element for to be deletion, as in (61) as opposed to (62).

- (61) I don't know who you're going to get for me to throw darts at tonight, but I want him tolerant.
 (62) *I don't know who I'm going to throw up on tonight, but I want him tolerant.

It is difficult to see how the particulars of the to be deletion behavior of all the classes of verbs discussed here are to be related. It does seem, however, that in all cases the greater syntactic integrity of infinitive clauses with to be than those without to be parallels a greater semantic integrity of full infinitive clauses; in the case of cognitive perception verbs, propositions represented by full infinitives, that is, infinitives with to be, are viewed as less motivated by and less truth functionally dependent on the experience of the person represented by the subject of the embedding clause; with sensory perception verbs, propositions represented by full infinitives function more like propositions valid independently of the perceptions of the person perceiving rather than descriptions of sensory impressions; with performative verbs, the state of affairs described in full infinitive clauses is viewed as more independent of social convention and more relevant as an empirical fact; for potential-embedding verbs, the state of affairs described in full infinitives is seen as more independent in time from the matrix clause, and as actualizable in some world possibly not to be experienced by the human experiencer represented by the subject of the matrix clause. In other words, propositions formable from full infinitives as opposed to to be deleted infinitives are more alive as independent propositions, more oriented to an empirical world independent of egocentric perceptions or desires or social conventions. When to be is deleted, the element juxtaposed to the (presumably) raised NP not only becomes syntactically more like an adjunct to this NP and more of a part of the higher clause itself, but semantically its characteristics are also more adjunct-like, in that it functions less like a proposition evaluable as true or false or less like a state of affairs seen as existing or not existing independently of a particular person.

It should be remembered that to be deletion is only one step in the syntactic merging of two clauses; the formation of infinitives involves two important prior steps, the removal of a lower subject into object position of the higher clause and the loss of tense marking. Furthermore, the semantic differences between that clauses and infinitives are of the same kind shown to exist between full infinitives and infinitives without to be.

That is, the syntactic processes of both raising and to be deletion parallel the same kind of semantic disintegration of whole propositions and potential states of affairs relevant to an empirical reality, into elements whose status is more dependent on human perception, conventions, and desires.

However to be deletion is to fit into a formal grammar of English, its syntactic and semantic relation to raising should not be ignored, nor should the syntactic functioning of these two processes be seen as unrelated to their parallel semantic behavior. Since the meaning of verbs is important in determining which raising verbs will also govern to be deletion and since the meaning of verbs is also inextricably bound up with the semantics of their complements, it is difficult to see whether the facts about to be deletion are ultimately to be stated as generalizations about the semantics of verbs governing to be deletion and raising or about what kinds of complements can be broken up by these processes. In any case, it is clear that the subtle semantic differences connected to to be deletion cannot be shunted off as only a function of discourse-related thematic structure, as has been suggested for rules deriving subjects, for instance; and since I suspect that most of the seemingly workaday, usually considered optional transformational rules are fully as complicated semantically as this one, I believe that the investigation of dinky little rules like to be deletion is as important in clarifying the relation of syntax and semantics as is the investigation of rules with more fame, honor and tradition.

NOTES

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¹It might be argued that these perception verb NP temporally restricted adjective strings should be derived from when clauses containing the NP and adjective, as Dowty (1972) suggests for sentences like (ii): (i) Did you see the dancing girls nude? But the paraphrases in (ii) and (iii) are very odd, and so if sentences like (2) and (20) are not to be derived by to be deletion, they go on the list of mysteriously derived NP₁ V NP₂ Adj. strings discussed in Green (1972a, 1971b).

(ii) *When Tom noticed the front door, it was missing.

(iii) ?When I sensed him, he was about to get angry.

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