LEXICALLY GOVERNED PROPERTIES
OF *THAT* COMPLEMENTS

1. Meaning and form in the complementation system

The existence of several complement types (*that*-complements, infinitives, gerunds, *wh*-complements), as well as the fact that the same verb may take different complements brings up the question of their semantic relevance and of the semantic properties of complex sentences containing different types of complements. Several directions of investigating the relation between meaning and form within the complementation system suggest themselves. We will review them, before trying to apply them to the investigation of *that*-complements.

1. The most obvious line of research is the study of the relation between the meaning of a predicate and its syntax. Roughly, the hypothesis is that predicates that have related meanings c-select and also s-select the same complements. This hypothesis, which is confirmed to a degree, will represent a major premiss in our discussion of complementation.

Moreover, one could see to what extent there is any syntactic specialization of the different meanings of a predicate. The expectation is that different meanings of a predicate correlate with different syntactic structures. Here is an example:

(1)   a. I consider that Peter is smart. (consider= 'think, judge')
        b. I consider Peter to be smart.
        c. I must consider Peter's being abroad = 'take into account'.

Thus, as a stative verb of opinion, *consider* c-selects a *that*-complement or an infinitive, while as a mental process verb, *consider* selects a gerund.

2. A second approach to the form-content relation in the complementation system is the exploration of the pragmatic and possibly semantic effects of patterns which appear to be truth-functionally equivalent. An example is represented by pairs involving sentences with and without extraposition. Object extraposition induces a factive interpretation of the main clause predicate, an interpretation which may be absent in the pattern that does not show extraposition:

(2)   They reported that there had been an explosion.
        They reported *it* that there had been an explosion.

3. Thirdly, one could see whether different complements represent different ontological categories, namely, different abstract entities. As known, all complement-taking predicates may s-select an abstract entity as one of their arguments. Since Menzel's 1974 seminal study, it has been assumed that complement types correlate with distinct ontological categories, though the correspondence is almost never one to one. The point to make is that, while an independent sentence is not constrained in the range of abstract entities it can express, complement types evince a certain semantic specialization. Consider the following simple sentence:

(3)   Will married a rich girl.

Sentence (3) expresses the proposition 'that John married a rich girl'. In uttering sentence (3), the speaker *asserts* the proposition that Will married a rich girl, that is, he is committed to the truth (in the context) of the respective proposition. So sentence (3) has the pragmatic force of *an assertion*. If the proposition that Will married a rich girl is true, we may call it *a fact*, 'that fact that

Will married a rich girl'. But we might equally well say that (3) describes *an event*, 'the event of Will's marrying a rich girl', as well as a *situation*, namely, 'the situation that Will married a rich girl'.

'Proposition', 'fact', 'event', 'situation' are all abstract entities, ontological categories which may be associated with the same syntactic category, 'sentence' (CP or IP). A few brief clarifications regarding some of these terms are necessary.
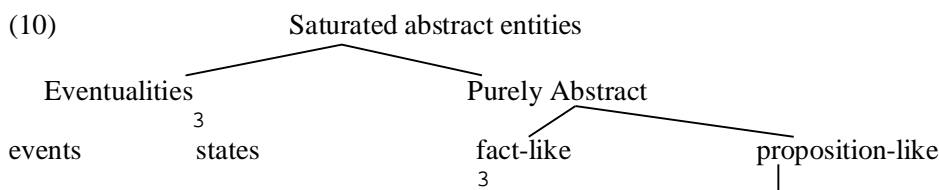
(4)   A proposition is the meaning of a (declarative) sentence. The main property of a proposition is that it has a truth value, it must be either true or false in a particular context.

(5)   A true proposition is a fact. The relation of facts to truth is particularly clear in English, as shown by conversational exchanges like the following: A. 'John has bought himself another car'. B: 'Is that a fact ?'

(6)   An event describes a complete change and (its referent) is located in (space) and time.

The ontological categories introduced above are named by nouns like: *proposition*, *event*, *fact*, *situation,* etc. These nouns may have a metalinguistic function, serving to categorially label the expressions that designate, propositions, facts, ideas, events, etc. Several syntactic patterns are characteristic for the explanatory metalinguistic role of these nouns (cf. Menzel (1975). For examples, they can be predicated about the appropriate complement clause (examples (7)), and they can govern the appropriate complements in noun+complement clause phrases (examples (8)):

(7)   His coming was an event.
        It is a fact that he is a genius.

(8)   the event of Peter's coming; the fact that John came;
        the proposition that I should forget him.

Main clause predicates that s-select complements of a given description generally also combine with nouns that label the semantic class of the complement.

(9)   He regretted her having met him.
        He regretted the event of her having met him.
        He regretted the event.

The study of the semantics of these nouns goes a long way towards the clarification of the respective concepts ('events', 'facts', etc.) and towards a better understanding of the relation between complement structures and the referents they designate.

Recent research has contributed to a better understanding of the abstract entities associated with complement types by providing a principled classification for them, as well as by specifying what kind of referents they designate. Assigning referents to these entities is not an easy task. Thus one may plausibly say that an *abstract situation* designates a *real world situation*, an *abstract event* designates a real world event, therefore a complete change, but it is less clear what the referent of a proposition is, or what the referent of a fact is. Asher (1993) sets up a spectrum of *world immanence for complete or saturated entities* in the fregean sense. Abstract entities vary according to the degree of abstractness that they (actually, their referents) evince, as shown in the chart below, followed by a few comments:

(10)   Saturated abstract entities

    Eventualities   Purely Abstract
                3
events   states   fact-like   proposition-like
                                       3 |

<div align="center">possibilities   situations   facts</div>

       The term *eventuality* (proposed by Bach (1981)) is an umbrella for states and events. The term *event* itself is also sometimes used to refer to both states and events. Eventualities are further divided into events proper (accomplishments, activities, achievements) and states. From the point of view of the degree of abstractness, eventualities may be taken to be *world immanent*. They have spatio-temporal location and causal efficacy, in the sense that the predicate 'cause', fundamental for understanding the structure of the real world, has events as its Subject and Object arguments. Among complement types, verbal nouns and, in part, gerunds are canonical syntactic realizations for events, thus combining with the verb *cause*, while *(For)-to* infinitives, which do not express events, expectedly do not combine with *cause:*

(11)   a. Repeated shelling of the house caused its falling.
           b. Their shelling the house repeatedly caused its falling.
           c. *To shell the house repeatedly caused for the house to fall.

Predicates which refer to placement in space/time, like those in (12), confirm that events have spatio-temporal location. Notice again that gerunds and verbal nouns appear in that frame, while infinitives do not.

(12)   a. Many violent sackings of the city took place from 1000 to 340 BC.
           b. The pop star's marriage to the rich girl occurred at ten yesterday, in London.
(13)   *For the pop star to marry the rich girl occurred at ten yesterday.

       Purely abstract entities (e.g., propositions, facts) differ from eventualities, in that they lack spatio-temporal location, and may or may not have causal efficacy. Thus, facts are endowed with *causal efficacy*, while propositions lack both spatio-temporal location and causal efficacy (cf. Asher (1993)). Since *that* and *for-to* complements express propositions, i.e., entities which lack space-time location, sentences like (14), with predicates expressing space time-location are predictably ill-formed, contrasting with the *ing*-complements in (11 a, b) above:

(14)   a. *That Peter married that rich girl occurred at ten last night.
           b. *For Peter to marry that rich girls occurred at ten last night.

       An essential semantic problem is that of defining the referent of a proposition. Informally, a proposition refers to a state of affairs, or a situation. More precisely, a proposition may be said to designate a *set of situations*, the set of situations where it is true. The intuition behind this view is that once we understand the proposition, we are able to select those states of affairs which are correctly described by the proposition, i.e., those states of affairs in which the proposition is true.
       From the perspective of their degree of complexity, there is a difference between *situations* and *worlds*. A *situation* is a group of individuals and a relation, along with the specification of whether the individuals do or do not stand in that relation. A *world* is nothing but a *maximal situation*. The difference between situations / worlds is mereological, so that a situation is a sub- part of a world.
       The meaning of a (declarative) sentence, i.e., the proposition, may now be defined either as *a set of situations* (a proposition is the set of situations where the proposition is true) or as *a set of possible worlds* (a proposition is the set of those worlds where the proposition is true). It is the second definition, that of the proposition as a set of possible worlds, which has a long tradition in philosophic semantics (Hintikka (1968, 1974), Montague (1974)).
       In the description of *that*-complements, infinitives and gerunds, mention will systematically be made of the range of abstract entities designated by each of these syntactic forms.

2. Semantic features that have syntactic correlates

As already stated, an obvious direction of investigation is the study of the relation between the meaning of a predicate and its syntactic behaviour. The expectation is that semantically related verbs govern the same sorts of complements and evince similar properties. Predicates which are considered to be "semantically related" always share one essential semantic feature, a feature which is systematically associated with syntactic correlates. In this paragraph we list some of the semantic a features which have syntactic correlates in the complementation system, insisting on the effects of semantic classes on *that*-complementation.

2.1. A first relevant semantic class is that of *emotive and/or evaluative* predicates. These predicates express the subjective evaluation of a proposition by a subject, rather than knowledge of its truth-value. Here are examples of emotive and non-emotive predicates, due to Kiparsky (1971).

(15)   a. [+ emotive] crazy, odd, sad, alarm, bother, a tragedy, regret, resent, deplore, urgent, vital, nonsense, unlikely, prefer.
        b. [-emotive] well-known, be aware, be sure, make clear, forget, say, suppose, seem, turn out, probable, believe etc.

Among the syntactic properties of emotive verbs is their ability to take a *for-to* infinitive complement and to allow the use of the subjunctive mood in their *that*-complement clause.

(16)   a. It is odd for him to have acted like that.
        b. I would regret for you to believe that.
(17)   a. It is sad that we should have come to that.
        b. I deplore that he should have done that.

2.2. A second relevant semantic dimension in the complementation system is *factivity*. (cf. Kiparsky (1971)). Factive predicates are those that presuppose the truth of their complements. The negation test below shows that the complement clause is a presupposition of the complex sentence.

(18)   a. I regret that he agreed to the proposal.
        b. I don't regret that he agreed to the proposal.
        c. He realized that he had made a mistake.
        d. He didn't realize that he had made a mistake.

In other words, the complement of a factive verb is, ontologically speaking, a fact, rather than merely a proposition, as is evident from paraphrases of the following type:

(19)   They deplored that so many people had been killed.
        They deplored the fact that so many people had been killed.
        They discovered that many people had been killed.
        They discovered the fact that many people had been killed.
        Thus, what ontological category is designated by a complement clause depends not only on the syntactic type of the complement, but also on the meaning of the main verb and the

manner of combination of the complement with the main verb, as will extensively be proved below. Here is a non-exhaustive list of f(active) predicates:

(20)   f-verbs: regret, resent, forget, amuse, suffice, bother, care; odd, strange, interesting, relevant, sorry exciting, admit, comment, emphasize, forget, inform, know, mention, point out, recognize,
(21)   realize, find out, discover, know, learn, note, notice, observe, perceive, recall, remember, reveal, see.
         f-adjective: aware, significant, odd

Karttunen (1971) noted that the verbs in (21) may lose factivity in certain environments, for instance, in questions or in conditionals. Thus, in the examples below, the speaker of (22a) is, and the speaker of (22b) is not, committed to the truth of the proposition *that I have not told the truth*. In (22b) this proposition is not presupposed, but merely asserted.

(22)   a. If I regret later that I have not told the truth, I will confess it to everyone.
         b. If I realize/discover that I have not told the truth, I will confess it to everyone.

Karttunenen (1971) claims that, "true" factives, like those in (20), express some emotion or subjective attitude about the complement proposition. This is why most true factives are also emotive/evaluative. Semi-factive verbs assert the manner (realizing, discovering, etc.) in which the subject came to know that the complement proposition is true. As will be seen later, factivity is a property that depends not only on the lexical make-up of the verb, but also on the syntactic construction, mood choice etc., in other words, factivity may be suspended in certain contexts.
F-verbs differ in interesting ways from *p(ropositional)* verbs. As their name shows, these verbs are characterized by the fact that the ontological type of their complement is a proposition. The class of propositional verbs includes *speech act verbs* (i.e., verbs of linguistic communication): *assert, say, tell*, etc., and verbs of propositional attitude (traditionally called verbs of mental perception): *believe, think*, etc. Examples are listed in (23).

(23)   p-verbs: allege, assert, assume, believe, claim, conclude, conjecture, consider, decide, declare, envisage, estimate, fancy, feel, figure, imagine, intimate, judge, propose, report, reckon, say state, suggest, suppose, suspect, tell think;
         p-adjectives: likely, possible

There are several syntactic properties which are sensitive to the factive/ propositional difference. First, note that f-complements generally require the *that* complementizer, as in (24a, b), although this requirement is not so strong in some cases such as (24c). Hegarty (1991) assumes, however, that the complementizer is present (at LF) in all f-complements, even when it is overtly non-obligatory. In contrast, p-verbs may appear with a null complementizer, as discussed in the previous chapter.

(24)   a. *John accepts [ϕ[Mary left]]
                 mentioned
                 pointed out
                 recalls
         b. *John informed Bill [[ϕ[Mary left]]
         c. ?John admits [[ϕ[Mary left]]
                 forgot
                 noticed

(25)   a. He   knows
                  believes (that) they will get there in time.
                  thinks
                  says

P-verbs and f-verbs differ in two other respects. F-complements can occur with an associated object expletive, that is, they allow object extraposition, as in (26); p-complements cannot, as seen in (27):

(26)   a. I regeret it [that John left].
         b. John mentioned it [that Bill just left].
         c. John commented ont it [that nobody seems to care].
(27)   a.*I suppose / claim it [that John left].
         b.* Bill said it [that John left].

Next, p-verbs allow the Accusative + Infinitive construction and the Nominative + Infinitive constructions, while f-verbs do not:

(28)   a. We believe / claim / suppose [John to be talented].
         b. *We notice /emphasized/ regretted John to be talented.
(29)   a. John is believed/ supposed [t to be talented] (p-verb).
         b.*John is noticed / emphasized/ regretted [to be talented].

There are a few possible exceptions, i.e., there are a few factive verbs which accept the Accusative + Infinitive (see (30) below). This is expected since the match between semantic properties and syntactic properties is nearly always imperfect, and there will be more evidence that factivity is context-dependent.

(30)   We found/ recognized /determined Peter to be responsible for the attack.

2.3. These differences follow from the fact that factive and non-factive tensed complements differ in their internal event structure, in the manner in which the event variable of the complement clause combines with the main clause (cf. Hegarty (1991)).

It is known that the θ-grid of a verb includes an e-(ventuality) variable, alongside of the θ-roles designating the internal participants in the event. The e- position links the verb with Inflection and with the adverbials designating the place, time, purpose, etc. of the event. The role of Tense (Inflection) is to actualize one event from the class of events designated by the VP. More technically, Inflection is said to bind the e-variable, discharging the event position in the θ-grid. For example, the verb *see*, has the following grid: *see*--> (<1,2> e), where e is an eventuality θ-position. The e-variable is (semantically) projected with the θ-grid up to VP, where it is discharged through θ-binding by a tensed Inflection.

(31)   a. Mary saw Tom.
         [$_{IP}$ Mary [$_{I'<>}$ [$_{I}$ [+Tense]] [$_{VP}$ <e> see Tom]]]
                           |-------------|

In semantic composition, θ-binding by Tense introduces existential quantification over the e-variable, so that the sentence actually says that there was an event of Mary seeing Tom:

(31)   b. ∃e see (Mary, Tom, e)

Let us assume, with Hegarty (1991), that Inflection discharges the event position only in main clauses, and that in subordinate clauses, the event variable is not bound by the subordinate clause Tense, percolating to the level of the CP, and possibly further to the level of the main clause Inflection. Intuitively, this follows from the interpretative dependence of the complement clause on the main verb. Predicates s-select complements with different semantic interpretations (facts, propositions, etc.). Selection operates between the main verb V^0 and the CP, so it is at the CP level that the semantic properties of the complement are determined.

As to the difference between f-verbs and p-verbs, intuitively, the complement of an f-verb is more independent of the main verb than the complement of a p-verb. Thus the truth of the complement clause of an f-verb is independent of the truth of the main clause. The complement of an f -verb is a fact, the e-variable is actualized, independently of the main clause. F-complements are presupposed.

Hegarty (1991) proposes to formalize this idea by allowing the subordinate C^0 of an f-verb to bind the e-variable of the complement, so that, with f-verbs, the e-role is discharged internally to the CP. C^0 acts like a sort of definite binder. The f-verb will then combine with a CP that has no free e-variable, since the e-variable has been bound by C^0, as in (32) below:

(32)   forget [$_{CP}$ <> that [$_{IP\ <e>}$ Max [$_{I'\ <e>}$ I [$_{VP<e>}$ visit London]]]]
               |-------|

F-verbs select for a *closed* complement, CP<>, one whose e- position has been bound. This signifies a certain degree of independence of the subordinate clause with respect the main clause. Binding by C^0 guarantees that there is some *definite event* an event which actually occurred, with respect to which some attitude is expressed. Possible entailments for (33 a), are those in (34). The interpretation in (34) suggests that the complementizer *that* is interpreted like sort of definite binder (as in (35)).

(33)   a. John mentioned   [that Bill sliced the grapefruit]
        b.   forgot
        c.   regrets
        d.   pointed out
(34)   a. Regarding the event e in which Bill sliced a grapefruit, John mentioned that e occurred.
        b. John mentioned that the event in which Bill sliced a grapefruit occurred.
(35)   mention [CP<> that [$_{IP\ <e>}$ Bill [$_{I'\ <e>}$ I[$_{VP<e>}$ slice a grapefruit]]]]
(36)   John mentioned that δe [slice (Bill, grapefruit, e)] occurred.

Let us turn to p-verbs now, in examples like the following:

(37)   John believes [that Max visited London].

For p-verbs, the e-variable of the subordinate clause is not discharged either by the subordinate Tense, or by the subordinate C^0. We will assume that the e-position of a propositional complement is discharged in semantic composition with the verb that selects this complement, as in (38):

(38)   believe[CP <e> that [IP <e> Max [I' [VP <e> visit London]]]]
            |------------|

P-verbs thus select a complement with a free e-variable CP <e>, a variable discharged in semantic composition with the main clause predicate. Intuitively, the event expressed by the

complement clause is not actualized independently of the main clause event. This corresponds to the fact that the complement of a p-verb is interpreted as a proposition whose truth value is undecided at the level of the complex sentence. Thus from (37), it does not follow that Mary visited London, the event of the complement clause simply holds in possible worlds *conforming to John's beliefs.*

In conclusion, f-verbs and p-verbs select two different manners of semantic composition with the event of the complement clause. This difference in the event structure of the complement clause neatly accounts for the syntactic differences between f-verbs and p-verbs mentioned above.

First, f-complements need a complementizer since the latter plays a semantic role in binding the event position of the complement clause. The complementizer of a p-complement plays no semantic role, and is therefore not obligatory at LF.

Secondly, consider object extrapostion illustrated in (26), (27). The adopted hypothesis is that the e-variable of the CP is discharged by the main verb. As known, the operation of θ-binding is restricted to sister nodes. Therefore, if the e-role of a p-verb complement is to be discharged in a process of composition with the main verb, then the complement of a p-verb must be projected as a sister of the main verb. This prevents the complement CP from having an object expletive in its place, as in (27a), with the clause in adjunct position.

Consider f-verbs now. Since the e-role of an f-verb complement is discharged internally to the CP, the f-complement is not required to be projected as sister of the verb that selects it (cf. Hegarty). Hence, object extraposition is in principle possible with f-verbs. As we have seen, when a *that*-clause is selected as an argument of factive verb, the C^0 discharges the e-variable, since the factive verbs s-selects a closed complement. Things are different when the clause is "extraposed" in the *it + CP* structure. As already discussed, in this case the CP is projected as an adjunct (or a predicate), and the main verb selects and θ-marks the pronoun *it*, interpreted as designating some specific event. (See section 4.2. above). The CP is a syntactic / semantic predicate, taking the event designating pronoun *it* as its subject. Therefore, in this case, the complementizer does not bind the e-variable, the CP has a free e-variable which is bound by the subject pronoun.

Finally consider the Accusative/Nominative + Infinitive constructions in (28), (29). In this case, there is no complementizer to discharge the e-position. Consequently, the e-position *must* be discharged in composition of the infinitive with the higher predicate. The conclusion is that only a predicate that s-selects a complement with an open e-position will c-select either of the two infinitive constructions. Since p-predicates select an open IP<e>, but f-verbs do not, it is expected that p-verbs accept the two infinitive constructions, while f-verbs do not.

Hegarty's analysis indicates that the properties of p-/f-complements follow from the dispensation of the θ-position, which is bound by a definite binder in f-complements, but not in p-complements, rather than following from the "meaning" of the verbs.

This view is confirmed by the fact that other verbs which are not normally factive (i.e., do not presuppose their complements), presumably may allow this mode of semantic composition with the complement clause, and, as a result they may appear in the patterns associated with f-verbs; their interpretation becomes factive, in such patterns. An example is that of *r(esponse) stance verbs* (cf. Cattell (1978)), in (39) and (40):

(39)   r-verbs: accept, confirm, verify, deny.
(40)   a. They didn't accept *(that) loneliness causes cancer.
        b. They didn't confirm *(that) loneliness causes cancer.
        c. They didn't verify *(that) loneliness causes cancer.

These verbs also allow object extraposition and disallow the Accusative + Infinitive.

(41)   They accept/confirmed/deny/verified that loneliness causes cancer.

        They   *accept the lake to be polluted.

                   *verified.

                   ? doubt the lake to be polluted.

On these grounds, we assign to r-complements the same event structure that we assigned to factive complements, as follows:

(42)   agree $_{[CP\diamond}$ that $[_{IP<e>}$ Max loves Cecilia]]

                 |--------|

The analysis of f-/p- verbs confirms the claim that semantically related verbs evince similar syntactic properties.

2.4. One more important semantic dimension is that of *assertivity*, which cuts across factivity. Often, if not always, a declarative sentence is used to make an assertion. The essential feature of an act of asserting is that the speaker is committed in varying degrees to the truth of the expressed proposition. An assertion like *It is raining* is thus a claim to the truth of the proposition *that it is raining*.

If a sentence is complex the main assertion of the sentence is contained in the main clause. The assertion is (linguistically) identified as that part of the proposition which can be questioned or denied, (the part which is not presupposed).

Hooper and Thomson (1975), Urmson (1963) have noticed that with certain main verbs the complement clause may be part of the assertion made by the complex sentence; moreover, sometimes the complement clause represents the main assertion of the sentence. Verbs which grant assertion status to their complement clause have been dubbed [+ assertive] verbs. For all assertive verbs, the complement clause makes an assertion. Depending on the semantic contribution of the main clause, there are two classes of assertive verbs:

a) When the main clause, like the complement clause, also makes an assertion we speak of *strong assertive verbs*. The verb *say* is an example. A sentence like (43) below actually makes two truth claims, respectively contributed by the main clause and the complement clause.

(43)   a. The boss says he wants to hire a woman.

        b. The boss says X.

        c. The boss wants to hire a woman.

Sentence (43) has two readings. On one reading, assertion (43b) is the main assertion, the assertion whose truth is at stake at that point in the discourse, i.e., what counts is what the boss, rather than somebody else, actually said. The main clause would not be felicitous as a parenthetical.

(44)   a. Who said anything about hiring a woman?

        b. The boss says he wants to hire a woman.

        c. ??We have to hire a woman, the boss says.

On a second reading, the assertion whose truth is in question is (43c), therefore, the assertion made in uttering the complement proposition. Assertion (43b) is so inessential that it can be turned into parenthetical clause, or even omitted. Thus, in the exchange below the verb *say* is used parenthetically.

(45)   a. Did the boss consider Bill's application?

        b. No, he says he wants to hire a woman.

c. No, he wants to hire a woman, he says.

The verbs below behave like *say*, that is, they report assertions, so that their complements are indirect assertions, but the main clause may also represent an assertion. These verbs denote locutionary verbs or illocutionary verbs of assertion. Semi-factive verbs, listed in (21), may also be used as strong assertive verbs.

(46)   acknowledge, admit, affirm, allege, answer, argue, assure, certify, charge, claim, contend, declare, decide, deduce, divulge, emphasize, explain, grant, guarantee, hint, hypothesize, imply, indicate, insist, intimate, maintain, mention, point out predict, prophesy, postulate, remark, reply, report, say, surmise, suspect, state, suggest, testify, verify, vow, write, agree; be sure, be certain, be obvious.

All strong assertive verbs designate *illocutionary acts*, specifically, statements. In this respect they differ from *weak assertive verbs*. The latter designate *mental processes* or propositional attitudes (psychological states) (Searle (1983)). In this case too, the complement clause may be asserted, sometimes representing the main assertion of the complex sentence. Examples of weak assertive verbs are listed below:

(47)   think, believe, suppose, expect, hope, be afraid, imagine, guess, seem, appear, figure, etc.

As already mentioned, these verbs either express mental states and propositional attitudes (as in (48) below), or they are used parenthetically, the main assertion being the one made in the complement clause, as in (49) below:

(48)   a. I believe all men are born equal.
         b. I expect a surprise soon.
(49)   a. I guess most embarrassing of all was falling down the stairs.
         b. Most embarrassing of all was falling down the stairs, I guess.

On the other hand there are, of course, many non-assertive predicates, true factives (emotives) or non-factive (*be likely, be possible, inconceivable, doubt, deny*).

3. Syntactic correlates of assertivity

3.1. *Parenthetical clauses*. There are a number of syntactic properties that correlate with the distinction between assertive and non-assertive verbs, showing the relevance of this feature. Thus all assertive predicate (weak and strong) allow their complements to be fronted, while the 'main clause' appears as a *parenthetical clause*. This operation is known as *Parenthetical Clause Formation*. Here are examples:

(50)   a. I think the wizard will deny your request. (weak assertive)
         b. The wizard will deny your request, I think.
(51)   a. He soon realized that she was a compulsive liar. (strong assertive, semi-factive)
         b. She was a compulsive liar, he soon realized.
         a'. He says it's just started to rain. (strong assertive)
         b'. It's just started to rain, he says.

(52)   a. His name is Alfred, it seems to me.
        b. His name is Alfred, it turns out.

        3.2. Parenthetical Formation is responsible for creating sentence-final parenthetical clauses. Parenthetical clauses can also appear clause internally in various niches in the headless complement clause. Clause-internal parenthetical clauses have the following descriptive properties:
        a) What appears to the right of the parenthetical clause must be a maximal projection: DP, AP, PP, VP, CP.

(53)   a. John should run, I think, down the street. [PP]
        b. *John should put, I think, down the book.
        c. He likes, I believe, every friend of John. [DP]
        d. *He likes every, I believe, friend of John.
        e. He would prefer, I suppose, for John to leave. [CP]
        f. *He would urge, I suppose, John to leave.

        b) Secondly, the constituent which appears to the right of the parenthetical clause is generally a focus constituent. Certain kinds of constituents which cannot receive contrastive stress and cannot appear as focus constituents in other constructions (such as, say, cleft sentences) cannot occur to the right of the parenthetical clause either:

(54)   a. * It's down that you should write the address.
        b. *You should write the address, I'd say, down.
(55)   a. It's themselves that they will sooner or later injure. (ordinary reflexive)
        b. *It's themselves that they will sooner or later perjure. (inherent reflexive)
        c. They will sooner or later injure, I predict, themselves.
        d. *They will sooner or later perjure, I predict, themselves.

4. The syntax of parenthetical clauses.
Indirect speech, Free Indirect Speech

        Parenthetical clauses are of interest especially from the point of view of the difference between indirect discourse and free indirect discourse, observable in the pairs below:

(56)   a. He promised that he would return the book the next day.
        b. He would return the book tomorrow, he promised.
(57)   a. He wondered what Mary would do next.
        b. What would Mary do next, he wondered.

        In both pairs, the main clause in (56a), (57a) appears as a parenthetical clause in (56b), (57b). At the same time, the complement clause has a different syntax in the parenthetical construction. Specifically, in parenthetical constructions, the fronted complement has the syntax of a root clause, in line with the well known characterization of free indirect speech (FIS), as a discourse that borrows the syntax of direct discourse (DD), but borrows the use of tenses and pronouns from indirect discourse (IS). Thus the complementizer must be missing in (56b). Similarly, in (57b) the interrogative sentence is a direct question, with Inversion. Therefore, to the extent that we understand the syntax of parenthetical constructions, we understand the syntax of FIS as well. The study of *that*-complements has amounted to a characterization of the syntax of IS.

In this section we propose a feature checking account of the syntax of FIS, proving that it is minimally distinct from IS; basically, we assume that the CPs, i.e., their complementizers, have a different feature make-up in FIS. This explains two things:

a) First, it explains the different internal syntax of the CPs in free indirect speech, namely the fact the complement clauses in FIS have the syntax of direct discourse. Declaratives appear without *that*, and, what's more, they cannot be introduced by *that*, while questions show Inversion.

b) Secondly, on the assumption that verbs s-select CPs headed by certain complementizers, we understand why CPs that do not exhibit the right feature make-up, and, therefore, fail to satisfy the s-selection properties of the main verb must move from the object position, to prevent the derivation from crashing. This is the reason that forces Parenthetical Formation.

4.1. Before continuing, a further necessary assumption will be introduced. Namely, we will assume that all *root clauses* are CPs, all contain an uT feature in C^0, this justifying the projection of the CP level. Root questions differ from root declaratives in the properties of the uT feature. In interrogatives, the uT feature is strong and requires overt movement of an auxiliary, as discussed in the preceding chapter. In root declaratives, uT lacks the EPP feature, so that it will be checked by Agree. The uT feature in C^0 Agrees with the feature of the T^0 head.

Let us return to parenthetical constructions now. It can be argued that, appearances notwithstanding, the parenthetical clause was the main clause at some point of the derivation. Several facts support this claim. Thus, though seemingly independent, the fronted complement clause depends on the parenthetical verb with respect to tense interpretation, observing the Sequence of Tenses. As known, SOT is a configurational phenomenon. This suggests that the fronted complement was initially c-commanded by the (now) parenthetical clause:

(58)   a. It seemed to me that there was/ *is something funny about Venus.
       b. There was / *is something funny about Venus, it seemed to me.

The direction of pronominalization also suggests that the clause preceding the parenthetical was subordinate to the parenthetical. Thus clause (59b) is synonymous with (59a), indicating that Move α might relate such pairs. Sentence (59c) is ill-formed on the intended coindexation, almost as unacceptable as its (hypothetical) source, (59d). On the indicated coindexation, sentence (59d) is a clear violation of principle C, since a referential expression, *John*, which should be free, has a pronominal antecedent. However, unless we assume that (59c) derives from (59d), it is not clear why the pronoun, he_i cannot be bound by the proper name, because the pronoun is free in its own clause, so Condition B is observed. If it is accepted, however, that Parenthetical Formation has derived (59c) from (59d), then the ill-formedness of (59c) reduces to that of (59d), which is independently excluded by Principle C.

(59)   a. John confessed that he had met Peter.
       b. He had met Peter, John confessed.
       c. ?*John$_i$ had met Peter, he$_i$ confessed
       d. *He$_i$ confessed that John$_i$ had met Peter.

The most striking formal difference between CPs in IS and fronted clauses in FIS is that in IS clauses may or must be introduced by *that*, while in FIS, clauses cannot be introduced by *that*. Thus, it is the obligatory presence vs. the obligatory absence of *that* which makes the difference between a topicalized clause in IS (e.g., (60a)) and a fronted complement in FIS (e.g., (61)).
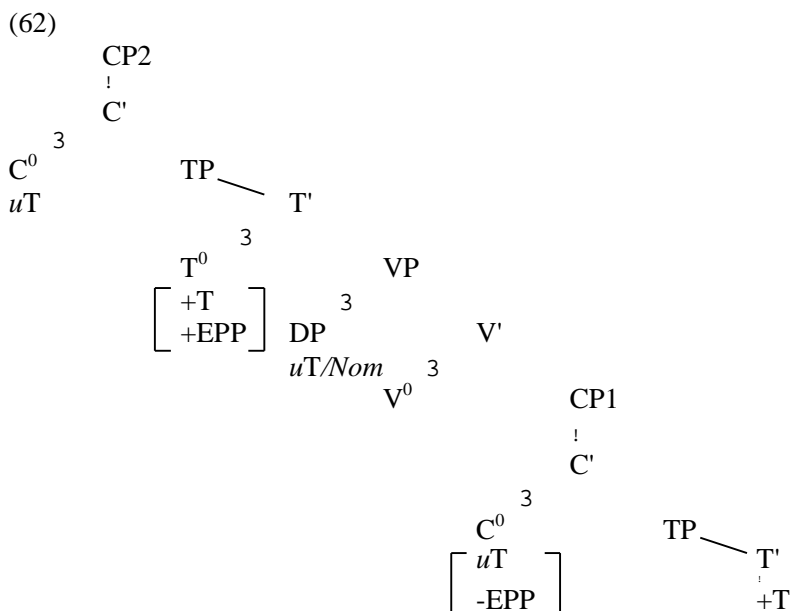
(60)   a. That Mike could have done that to you, I could never accept. (topic CP)
         b. *Mike could have done that to you, I could never accept.
(61)   a. *That there was something wrong with Mark, he thought.
         b. There was something wrong with Mark, he thought.
         (fronted complement clause in FIS)

It is this formal difference that our account will put to use. The discussion of *that* complements in the preceding chapter has lead to the conclusion that, with *that* complements, the C^0 has the feature [+uT , +EPP]. The EPP feature of C^0 forces the movement of a constituent to the C projection: either *that* merges in C^0 or the subject moves to SpecP to check uT.

The absence of *that* in the fronted CP of parenthetical constructions suggests that the uT of C^0 is checked by Agree, not by Move. This means that the C^0 of these clauses does not have an EPP feature, i.e., it is [+uT, -EPP]. Several properties of the fronted clause follow from this description of C^0.

a) The complementizer *That* cannot Merge in such a complement clause since *that* spells out the features [uT, +EPP].
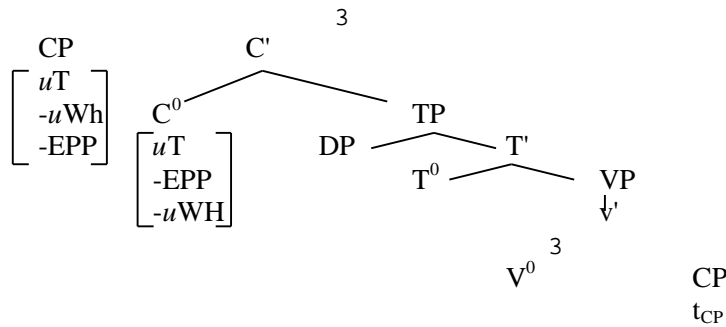
b) The subordinate CP will not be used to check the (interpretable) T feature of the matrix clause. Consider configuration (62) below. The uT feature of the subordinate clause, CP_1, will have been marked for deletion at the end of the CP_1 phase, but features checked by Agree survive to the end of the derivation. The main clause Tense has an EPP feature, which might in principle be checked by the main clause subject DP or by the complement clause, both of which (still) contain an uninterpretable T feature. The closest element to the main clause T is the subject, so it is the subject which will check its uT/Nominative feature by moving to SpecT. As to the uT feature of the main clause C^0, it will be checked by Agree at LF. The embedded CP will thus not reach the subject (i.e. lowest) SpecT position. When the subordinate CP moves, it moves to a higher specifier .

(62)
```
        CP2
        !
        C'
       3
C⁰            TP
uT          /    \
          TP      T'
                 3
             T⁰        VP
           ┌─────┐   3
           │ +T  │  DP         V'
           │+EPP │  uT/Nom   3
           └─────┘      V⁰         CP1
                                    !
                                    C'
                                   3
                                C⁰        TP
                              ┌────┐     /  \
                              │ uT │    TP   T'
                              │    │         !
                              │-EPP│        +T
                              └────┘
```

c) The features of the embedded C^0 are also responsible for Parenthetical Formation. That the clause should be displaced from its object position follows from the s-selectional requirements of the main verb. Declarative complement-taking verbs select for a C^0[+uT,+EPP],

while the C^0 in parenthetical constructions is [+uT, -EPP]. A CP having these features *cannot be sister* to the verb and will have to move. Plausibly, the CP moves on the basis of its default φ-features, or on the basis of its uT feature. We tentatively assume the former possibility. The main clause C^0 still has unchecked φ-features and could attract the CP, on the basis of its default φ-features; the CP moves to SpecC, producing a parenthetical constructions which looks as follows:

(63)   a. John had arrived, Mary said.

```
                        CP
                              3
        CP                C'
      ┌ uT  ┐          ╱    ╲
      │ -uWh │     C⁰        TP
      └ -EPP ┘   ┌ uT  ┐   DP ──  ── T'
                 │ -EPP │     T⁰ ──  ── VP
                 └ -uWH ┘                  V'
                                    3
                              V⁰              CP
                                             t_CP
```

Additionally, given that the subordinate clause contains the salient information, while the (former) main clause is merely 'parenthetical' it is reasonable to claim that the subordinate CP also checks a focus feature in SpecC when it raises by virtue of its φ-features. Thus, more than DPs, CPs occur in positions which are more in line with their discourse role.

d) Finally the assumption that the clause is initially in object position explains the pronominalization and SOT phenomena discussed above.

The analysis can easily be extended to *interrogative parenthetical constructions*. Consider the examples below. Again, there are clear differences between IS and FIS, as noticed in the examples below, where a topicalized indirect question, contrasts with a fronted question in a parenthetical construction. Again, the hypothesis is that the differences follow from slightly different features in C^0:

(64)   a. Where he had gone, nobody knew. (topicalization)
        b. *Where had he gone, nobody knew.
(65)   a. Where had he gone, Susan wondered. (parenthetical clause formation)
        b* Where had he gone, Susan still wondered. (topicalized indirect question)

The difference between indirect questions and questions in FIS is that the former do not show Inversion, while for the latter, Inversion is obligatory. When there is Inversion the uT feature of the interrogative C^0 is strong, having the EPP property. Thus the C^0 of the fronted sentence in (65a) is [uT,+EPP, +wh, +EPP]. The *wh*-word checks the uWh feature, the auxiliary *had* checks uT by adjunction to C^0.

In contrast in IQs, the uT feature lacks the EPP property and is checked by Agree. The C^0 of the subordinate CP in (64a) is [uT, -EPP, uWh, +EPP]. The *wh* feature is strong and checked by moving a *wh*-phrase to SpecT, while uT is weak and checked by Agree with T^0.

The properties of the subordinate interrogative C^0 in FIS, [uT,+EPP, +wh, +EPP], account for the following properties of parenthetical constructions with interrogative clauses:

a) The subordinate C^0 is [uT,+EPP, +wh, +EPP], having two strong features respectively checked by moving a *wh*-phrase to SpecC and an auxiliary in T. The internal syntax of interrogatives in FIS is that of root interrogatives, exhibiting both wh-Movement and Inversion.

b) Verbs that select interrogative complements s-select for C^0 [uT,-EPP, +wh, +EPP]. CPs that lack such properties cannot appear as sisters to the verb and will have to move. The interrogatives of FIS are introduced by C^0 [uT,+EPP, +wh, +EPP] and thus differ from indirect questions in that their uT feature is strong. This forces Parenthetical Formation, which drives the clause to SpecC, as explained for parenthetical constructions with fronted declarative clauses.

c) The CP that moves to SpecC also checks a [+Focus] feature.

Conclusion

1. The account we have presented shows that the differences between FIS and IS are minimal in English. Essentially, complementizers, and therefore the clauses they introduce, have different features in IS and FIS, respectively. Clauses may remain in the positions where they are projected only if they fully satisfy the s-selection properties of the main verbs. Failing to do this, they must move to the left periphery of the main clause. This is why Parenthetical Formation takes place.

2. The main discourse property of parenthetical constructions is that the object clause contains salient information, representing the Focus of the complex sentence. This forces a syntactic reorganization, demoting the former main clause to parenthetical status, and allowing the (former) object clause to have root syntax.
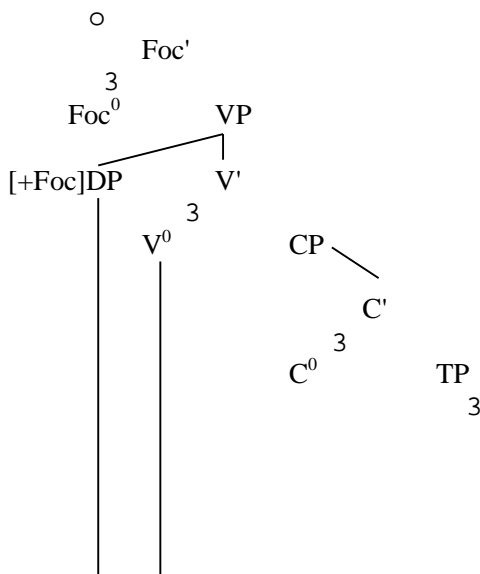
4.2. *Clause internal parentheticals*. The syntax of clause internal parentheticals is essentially the same. The same intuition will be used, namely that clauses may have to be dislodged from where they Merge, because they fail to completely satisfy the s-selectional properties of the main verbs.
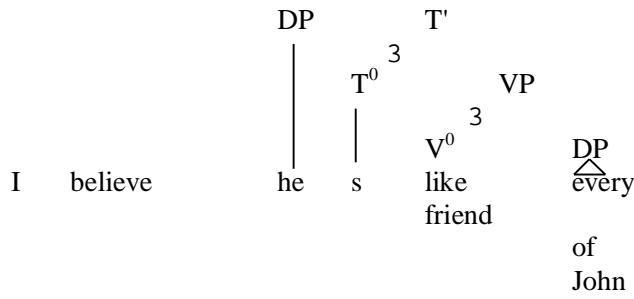
The starting point of the analysis is the empirical remark, that the constituent that appears left of the parenthetical clause is a heavily stressed (contrastive) Focus phrase.

(66)   a. John should run, I think, **down the street**.[PP]
         b. He likes, I believe, **every friend of John**.[DP]
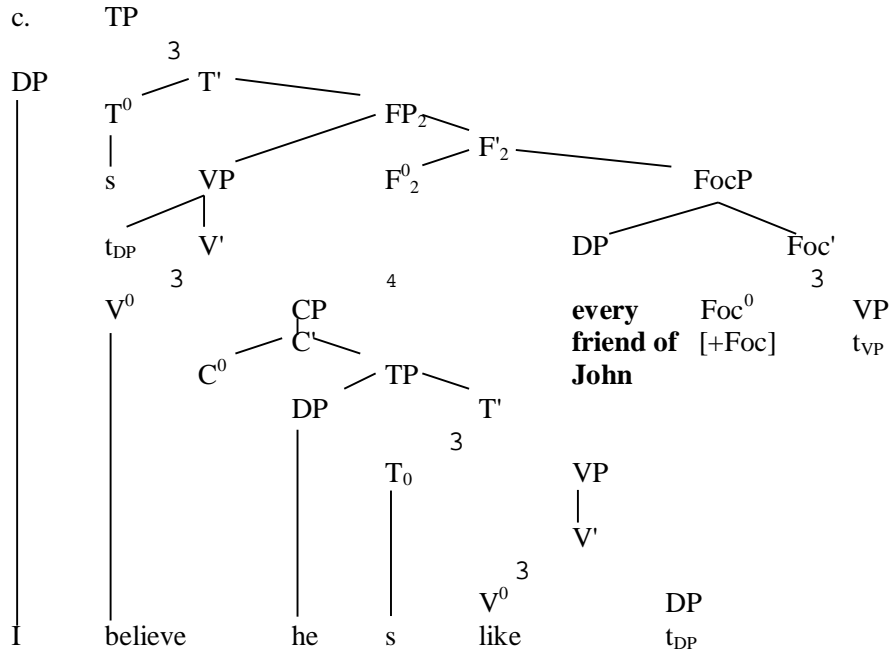   c. He would prefer, I suppose, **for John to leave**.[CP]

The derivation we propose includes two steps; a) movement of the Focus phrase to a Functional Projection which also accommodated other foci, such as HNPS-ed phrases and extraposed clauses (in the analysis proposed by Kayne (1998)) , followed by movement of the remnanat of the VP to a higher Spec. This part of the derivation is apparent in a) and b) below:

(67)   a. He likes, I believe, every friend of John. [DP]
         b.   FocP
                o
                     Foc'
                    3
               Foc^0 VP
          [+Foc]DP   V'
                  | 3
                 V^0 CP
                          C'
                        3
                   C^0 TP
                              3

DP   T'
     3
    T⁰   VP
      3
     V⁰   DP
         every

I   believe   he   s   like   friend

                   of
                   John

(67)   c.   TP

[Syntax tree for (67)c, with nodes: TP → DP, T'; T' → T⁰ (s), FP₂; FP₂ → F⁰₂, F'₂; F'₂ → FocP; FocP → DP (**every friend of John**), Foc'; Foc' → Foc⁰ [+Foc], VP (tVP); VP (under T') → tDP, V'; V' → V⁰, CP; CP → C⁰, C'; C' → TP; TP → DP, T'; T' → T₀, VP; VP → V'; V' → V⁰, DP (tDP). Terminals: I believe he s like tDP]
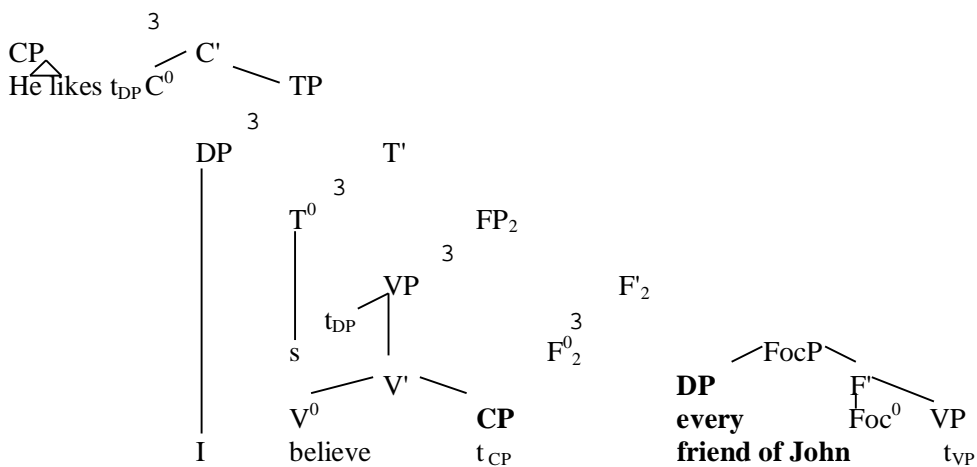
The next step is that of Parenthetical Formation, which moves the remnant CP to the Spec C position of the main clause, so that the former main clause is sandwiched between the fronted declarative and the contrastively focussed constituent.

(67)   d.
CP

[Syntax tree for (67)d, with nodes: CP → CP (**He likes tDP**), C'; C' → C⁰, TP; TP → DP, T'; T' → T⁰ (s), FP₂; FP₂ → VP, F'₂; VP → tDP, V'; V' → V⁰ (believe), CP (t CP); F'₂ → F⁰₂, FocP; FocP → **DP (every friend of John)**, F''; F'' → Foc⁰, VP (tVP). Terminals: I believe t CP]

Conclusion

Parenthetical formation is an important property of assertive verbs. Essentially parenthetical constructions represent a means of foregrounding the information of the subordinate clauses, whether they are declarative or interrogative. The fact that in English, CPs in parenthetical constructions have root syntax is a means of formally marking the idea that these clauses represent the central information, more than the introductory verbs that merely comment on them.

The fragment of grammar sketched here is capable to accommodate direct discourse, indirect discourse and free indirect discourse. The syntactic differences between them are accounted for in terms of the distinct properties of the introductory complementizers, and of the s-selection properties of the main verbs.

5. "Root" structures in assertive complements

A second important property of assertive complement verbs is that they allow "root transformations" to operate on their complement clause. As known, root clauses are those which are unembedded, and in many languages, English included, there are properties which single them out. For English, some characteristic main clause properties include: Negative Constituent Preposing, Preposing around BE, Adverbial particle Fronting. As shown below, these do not normally operate in embedded clauses:

(68)   *He was surprised that never before in my life had I seen a hippopotamus.
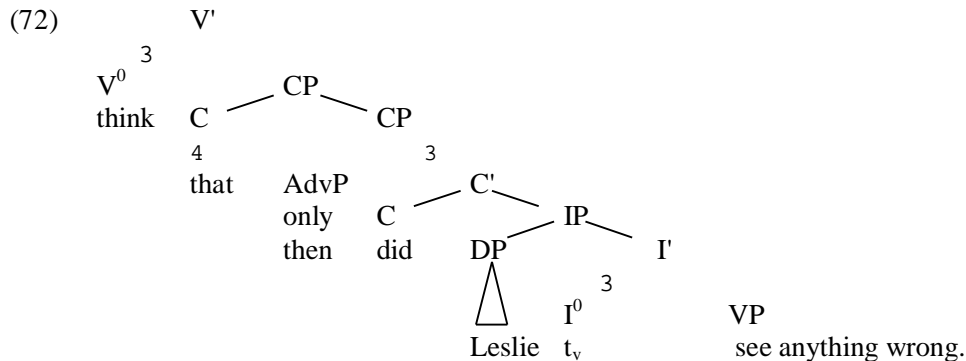   *Wendy was sorry that she opened the window and in flew Peter Pan.

However, the very same operations can be embedded under assertive verbs:

(69)   a. I said that never in my life had I seen such a crowd. (strong assertive verb)
          b. Carol said that most embarrassing of all was falling off the stage.
          c. Wendy said that she opened the door and in flew Peter Pan.
(70)   a. I suppose that most embarrassing of all was falling off the stage. (weak assertive verb)
          b. I expect that speaking at today's luncheon will be our congressman.
          c. I think that only then did John see anything wrong.
(71)   a. I found out that never before had he had to borrow money.
          b. Tinker Bell saw that Wendy opened the window and in flew Peter Pan.
          c. The public doesn't realize that even more corrupt is the Republican Party.

Thus, although root operations were applied to subordinate clauses, the sentences are grammatical, because these complements are assertions (complements of strong assertive verbs like *say*, of weak assertive verbs like *suppose, expect* or of semi-factive verbs like *find out, see that*). Root operations are stylistically emphatic; they throw light on the proposition whose truth is at stake, i.e. the assertion. This is why they are equally applicable to main clause assertions or to subordinate clause assertions. In contrast, as shown by the unacceptability of (68) above, they cannot operate on a presupposed proposition, as is the complement of factive predicates like *surprise*, or *be sorry*.

As to the syntax proper of complex sentences like (69)-(71), already discussed in Section 8 of the previous chapter, such sentences involve complementizer recursion (see (72),

corresponding to sentence (69c) above. Again the presence of the complementizer *that*, i.e. of C^0 with the features [uT, +EPP] is required to satisfy the s-selectional properties of the main verb.

(72)
```
              V'
          3
     V⁰        CP
    think   C  ╱    ╲  CP
            4          3
          that  AdvP    ╱ C' ╲
                only  C      IP
                then  did  DP    ╲  I'
                             △    I⁰  3    VP
                          Leslie  tᵥ        see anything wrong.
```

6. Properties of weak assertive verbs

Weak assertive verbs also share several syntactic properties that further individualize them. One of them is *so*-pronominalization. Complement clauses of nearly all verbs may be replaced by pronominal substitutes, like *it/ this/ that*. In addition, weak assertive verbs allow their complement to be replaced by the adverbial substitute *so*, when they are interpreted parenthetically.

(73) a. I regret that he has been fired. I regret it /* so.
      b. He declared that I was wrong. He declared it./*so
      c. John thinks that Bob will pass, and I expect so, too.
      d. Max doesn't believe Bob will pass and I don't believe so either.

Weak assertive verbs accept both *it, this, that* and *so* as complement substitutes. *It, this, that* are preferred when the verbs have their stronger (propositional attitude) reading, while *so* is preferred when they are interpreted parenthetically. The difference comes out in examples like (74) below; where the phrase *I believe so* is equivalent to a weakened or qualified *yes:*

(74) a. He says John is here, and I believe so too.
      b. He says John is here, and I believe it too.

Notice that *so* is an operator, that may move to Spec C in tag sentences, causing Inversion.

(75) a. Bill believes that Bob will pass and so does Max (= and Max believes so, too.)
      b. Mary had hoped that she'd be promoted and so had her mother.

Remark. The verb *know*, which is not weak assertive (but factive at least in some of its readings) nevertheless accepts *so* as a complement substitute. This shows that the correlation between semantic properties (weak assertivity) and syntactic properties (*so*-pronominalization) is limited.

6.1 On their parenthetical use, weak assertive complements also allow Negative raising. This is a rule that raises the clausal negation *not* from the complement clause to the Inflection of the main clause:

(76) a. I think that John won't be late.

b. I don't think that John will be late.
a'. I reckoned it wasn't so late.
b'. I didn't reckon it was so late.

In contrast with the equivalence of the pairs above, which suggests the negative-raising analysis in the first place, notice the clear difference in the pairs below, involving strong assertive and factive verbs:

(77)   The judge declared that Mary was not guilty.
         The judge didn't declare that Mary was guilty.
         The lawyer regretted that Mary was not guilty.
         The lawyer didn't regret that Mary was guilty.

6.2. Finally, notice that in their parenthetical use (weak) assertive verbs allow the formation of tag questions on their complements. This is a property that no other complement-taking verbs share; generally only root clauses may serve as hosts for tag-questions, as testified by the ungrammaticality of those examples in (78), where the tag question is built on the subordinate clause.

(78)   a. Inflation will continue, won't it?
         b. * I regrets that inflation will continue, won't it?
         c. The stew isn't cooked yet, is it?
         d.* I agree that the stew isn't cooked yet, is it?

In fact, even for (weak) assertive complement verbs, the possibility of taking tags formed on the complement sentences is limited to the first person singular of the Present Tense. (for an explanation of this limitation see Cornilescu (1982: 522ff)). Here are examples:

(79)   I suppose the Yankees will lose again, won't they? / *do I?
         I think this car needs a tune-up, doesn't it? / *do I?
         It seems to me that this meeting will never end, will it?

Conclusion

The discussion has shown that that complements may designate several complement types:
         a) *That*-complement of all verbs may designate *propositions*; this is the most general interpretation assigned to a that complement;
         b) *That*-complement of f-verbs may be interpreted as facts. Factivity amounts to a certain mode of semantic composition, as well as to a type of lexical meaning. Factivity is syntactically signalled by formal correlates.
         c) *That* complements of verbs that allow Extrapostion from Object position, such as f-verbs, and certain p-verbs) may also designate definite *events*.