IS COGNITIVE GRAMMAR A USAGE-BASED MODEL? TOWARDS A REALISTIC ACCOUNT OF ENGLISH SENTENTIAL COMPLEMENTS[1]

TERESA FANEGO
University of Santiago de Compostela

1.   Introduction

As pointed out by Newmeyer (2003: 683), the term *usage-based* was coined by Langacker (FCG1: 46, 494) to refer to those approaches which, as is the case with Cognitive Grammar (CG), reject a sharp distinction between language knowledge and language use. In a usage-based approach, knowledge of a language is seen as based in knowledge of actual usage and of generalizations made over usage events. Language acquisition is therefore a bottom-up process, driven by linguistic experience. Unlike generative grammar, which, in Langacker's (FCG1: 46) words, has "always operated with an archetypal conception of language as a system of general rules, and [has] therefore not accommodated irregular and idiosyncratic phenomena in a natural or convincing manner", a usage-based theory is claimed to give "substantial importance [...] to the actual use of the linguistic system and a speaker's knowledge of this use" (ibid.: 494; see also Langacker 1999: 91-145).

The question I wish to pose in this paper is whether Cognitive Grammar so far has taken its own usage-based character seriously and has really given "substantial importance to actual use". Interestingly, some recent research within the CG field appears to imply that it has not. I have in mind, in particular, a plenary lecture with the revealing title "'Usage-based' implies variational: On the inevitability of Cognitive Sociolinguistics", which was delivered by Dirk Geeraerts in the summer of 2003 at

the Eighth International Cognitive Linguistics Conference in La Rioja (Spain). In it Geeraerts stressed the importance for Cognitive Linguistics of starting to apply empirical methods and making regular use of language corpora capable of representing the full range of language varieties and linguistic groups. Basically the same view is implicit in the official website [http://cerebro.psych.cornell.edu/emcl/] of a workshop on *Empirical Methods in Cognitive Linguistics* held at Cornell University in May 2003. Under the heading 'Motivation', we can read as follows:

> Recent years have witnessed a virtual explosion of theory about the relationship between language and cognition in work on cognitive grammar (Langacker), cognitive semantics (Talmy), conceptual integration (Fauconnier and Turner), and conceptual metaphor (Lakoff, Sweetser). However, most of the empirical support for these theories lies in the linguistic judgments and intuitions of their proponents. [...] The *Empirical Methods in Cognitive Linguistics Workshop* is motivated by the idea that experimental and observational work can help substantiate the claims of cognitive linguistics, and to further develop an empirically valid account of the connection between language and cognition.

It seems reasonable to assume that in the future CG will be increasingly concerned with goals of this kind. After all, the variability of language has from the start played a major role in Cognitive Linguistic thinking, and, in addition, CG has repeatedly claimed (cf. Langacker FCG1: 154ff, FCG2: 494ff, Taylor 2002: 201-203) that it can handle straightforwardly, by reference to one or more knowledge structures or *cognitive domains*, such 'extralinguistic' aspects of a sentence's meaning as metalinguistic awareness of dialectal, sociolinguistic and stylistic diversity.

Bearing all this in mind, in the remainder of this paper I will examine the claims of CG with regard to one specific area of English grammar, namely sentential complementation, and will then go on to check whether such claims are supported by empirical data. I will end by arguing that the CG account of the complex area of English sentential complementation is unsatisfactory in a number of ways and does not reflect actual linguistic usage.

The paper is organized as follows. Section 2 briefly introduces the theoretical framework known as CG. Section 3 presents an overview of English sentential complements and summarizes their development since Old English times (700-1100); the justification for including diachronic information in a paper dealing only with Present-day English (PDE) will become clear in due course. Section 4 is concerned with non-cognitive research on the semantics of English complementation. Sections 5 and 6 review the chief cognitive analyses and examine their proposals in the light of the data on complementation retrieved from several computerized corpora of Present-day British and American English. Section 7 concludes the paper.

2.   Some basic tenets of Cognitive Grammar

Cognitive Grammar, as described in Langacker (FCG1, FCG2, 1988a, 1999), assumes that grammar is inherently symbolic and meaningful, not autonomous or accidental, and that "all valid grammatical constructs have some kind of conceptual import" (Langacker FCG2: 338). The meaning of a grammatical construct involves its conceptual content, and also how that content is construed. *Conceptual content* is the cognitive *domain* or background knowledge with reference to which linguistic expressions are characterized semantically (Langacker FCG1: 147-166, Taylor 2002: 195-203). To take an example, in describing the meaning of the word *thumb-nail* the speaker activates the domain of the human body, against which a host of body-part terms are conceptualized: *thumb-nail*, *thumb*, *finger*, *hand*, *arm*, etc.

More often than not, a semantic unit needs to be conceptualized against more than one domain. The concept [FATHER], for instance, is understood against the domain of kinship. But a father is also a physical being with weight and dimensions, and a living being who was born, grew up and will die. Thus physical object, living thing and kinship each constitutes a relevant domain for [FATHER]. In the same way, as already noted in Section 1 above, within CG, 'extralinguistic' aspects of meaning such as degrees of formality, dialectal diversity, and sociolinguistic variation are all candidates for conceptual domains against which the conceptualization of a given word or expression takes place.

Linguistic meaning does not, however, reside in conceptual content alone, for, as Langacker notes (1999: 5), "we are able to *construe* the same content in alternate ways, resulting in substantially different meanings". Thus the sentences in (1) are truth-conditionally equivalent: if one of the sentences truly applies to a situation, then so will the other. They differ, however, with respect to the particular *construal* the conceptualizer imposes on the scene:

> (1) a. Someone stole the princess's diamonds from her safe.
>   b. The princess's diamonds were stolen from her safe.

Similarly, as will become apparent below, the different syntactic realizations of sentential complements are treated within CG as the reflection of variations in the construal of the complement scene (see, among others, Langacker FCG2: 438ff, Achard 1998, Hamawand 2002, 2003a, 2003b).

A third aspect of CG which is also relevant for the purposes of this paper has to do with its conception of a semantic theory based on ideas of family resemblance (Rosch 1977, Langacker FCG1: 369-408). Linguistic expressions, whether words or larger units, are often polysemous and have a variety of related senses that form

a complex category that can be represented as a network. For instance, the network describing the conventional meanings of the English noun *ring* is represented by Langacker (1988b: 51-52) as consisting of a central (prototypical) member ('circular piece of jewelry')[2] plus several other members of the category linked to the prototype by *extension* (the semantic relation between prototypical and peripheral values; for instance, between 'circular object' and 'arena')[3] and *elaboration* (an entity elaborates another entity when it is construed with a greater degree of precision; e.g. 'circular piece of jewelry worn thru nose' elaborates 'circular piece of jewelry'). Categorizing relationships between the instances of a complex category vary in terms of their cognitive salience and also in their 'distance', i.e. the extent to which [A] must be extended or elaborated to yield [B]: while "clear meaning relations exist between adjacent members of the category, non-adjacent members may have little in common with each other" (Smith and Escobedo 2001: 551).

Related to the above is another theoretical construct in CG which also imposes a conceptualization of experience, namely *image schemas*, as defined by Johnson (1987) and Lakoff (1987). An image schema is a schematic conception (e.g. *container-content*, *part-whole*, *source-path-goal*, *center-periphery*, *balance*, etc.) which is grounded in everyday physical or bodily experience "and is projected onto new [cognitive] domains via metaphor" (Johnson 1987: 74; see also Langacker FCG2: 399ff, Taylor 2002: 519ff). Thus the notion of *balance* emerges primarily through our experience of maintaining an upright posture. The notion then gets extended to other, more abstract, domains, such as psychological states (*a balanced personality*), financial situations (*a balanced budget*), or power relations (*a balance of power*); importantly, as Taylor (2002: 523) notes, certain structural properties of the image schema are preserved across all its domain-specific instantiations. Later in this paper, we will see that cognitive research on complementation has generally argued that *to*-infinitival complements evoke aspects of imagery inherent in the source-path-goal image schema associated with prepositional *to*.

3. English sentential complementation: an overview

Sentential complementation, i.e. the situation that arises when a subordinate clause functions as an argument with respect to a governing element or head, has been a prolific area of research for many years (cf. Horie and Comrie 2000 for an overview) and is also becoming increasingly popular among cognitive linguists. Witness in this connection studies such as Dirven (1989), Langacker (FCG2: 31ff, 148-149, 419-423, 438-463, 1992: 304-308), Verspoor (1990, 1996, 2000),

Achard (1998), Horie (2000), Heyvaert (2000, 2003), Smith and Escobedo (2001), or Hamawand (2002, 2003a, 2003b).[4]

In the case of English, four major types of complement clauses can be distinguished, as illustrated in (2)-(5):[5]

> (2) *That/zero*-declaratives:
>   a. It is clear (*that*) *he made a mistake*.
>   b. He knows (*that*) *you are here*.
> (3) Bare infinitives:
>   a. All I did was *ask a question*.
>   b. We saw *Kim leave the bank*.
> (4) *To*-infinitives with and without a subject:
>   a. Max wanted *to change his name*.
>   b. The best plan would be *for them to go alone*.
> (5) -*Ing* clauses with and without a subject:
>   a. *Inviting the twins* was a bad mistake.
>   b. I resented *them/their going without me*.
>   c. We saw *Kim leaving the bank*.

Types (2) and (3) have been on record since Old English times (700-1100). As regards type (4), it is worth mentioning that the particle *to* introducing the infinitive was in origin a directional adverb/preposition with the meaning 'toward'. By Late Old English or Early Middle English (1100-1300) *to* had lost its prepositional character and had grammaticalized to an infinitive marker, so that it began to occur where previously only the bare infinitive was found (cf. Traugott 1992: 241ff, Fischer 1992: 317ff). Finally, the history of type (5) is considerably more complex (see Fanego 1996a, 1996b, 2004a, 2004b for details). The pattern in (5c), where the matrix predicate is a perception verb (*see*), can be traced back to Old English; here the -*ing* form represents historically the present participle. By contrast, in (5a) and (5b) the -*ing* form descends from an Old English derivational suffix which could be freely added to verb stems to form abstract nouns of action, as in OE *spilling* "destruction" (< *spillan* "destroy") or OE *wending* "turning" (< *wendan* "turn"). Following common practice among historians of the English language, I will employ the label *nominal gerund* to refer to this kind of noun and to their reflexes in PDE, as in "*the exploring of the mountain* took a long time". The labels *verbal gerund* or *gerundive -ing clause* will be applied to types (5a) and (5b), while type (5c) will be called an -*ing participle clause*.[6]

In Old English and Early Middle English (1100-1300) nominal gerunds behaved like any other noun in all relevant respects, and could therefore take nominal dependents of various kinds. The following examples illustrate their use with determiners (*the*, *his*) and with *of*-phrases serving as their notional objects:

(6) 1472-1488 *Cely Letters* 94/5:
at *the makyng of thys lettyr*
"at the moment of writing this letter/when writing this letter"

(7) c1385 Chaucer *Troilus and Criseyde* V 1833:
And thus began *his loving of Criseyde*

For reasons which I have discussed elsewhere (cf. Fanego 2004a), from Late Middle English (1300-1500) onwards nominal gerunds began to acquire verbal properties, a development that has ultimately led to the Present-day English situation, where gerunds have the ability to: *a)* govern an object or a predicative complement (e.g. "their following *the child* into England", "I don't like being *ill*"); *b)* be modified by adverbs or adverbials restricted to co-occurring only with verbs (e.g. "my *quietly* leaving before anyone noticed"); *c)* show tense and voice distinctions (e.g. "of *having done* it", "the necessity of *being loved*"); and *d)* take a subject in a case other than the genitive (e.g. "I resented *them* going without me"). In this way, English, unlike all other European languages, has evolved a third type of sentential complement, alongside finite clauses and infinitives.

Though, as noted above, the first instances of verbal gerunds can be dated back to Late Middle English, their spread across the grammar of English extended over a period of several centuries, with some subtypes becoming possible much earlier than others. Initially, for instance, verbalization was largely restricted to those gerunds that were dependent on a preposition, as in (8).

(8) c1303 (MS a1400) *Handlyng Synne* HS 408:
yn feblyng þe body with moche fastyng
"in weakening the body by too much abstinence"

In object position, the first verbal gerunds occur from the middle of the sixteenth century; see (9) for an early example and Fanego (1996a) for details. The earliest verbs to govern gerundive object clauses were negative implicative[7] verbs like *escape*, after which *to*-infinitives (e.g. c1420 Lydgate *Troy Bk*. 3, 1084 "Troilus... *escaped to be* prisoner") had formerly been the rule:

(9) Shakespeare *The Tempest* 2.2.59: [You would] Scape being drunk, for want of wine.

Subsequently, the use of gerunds in object position spread to more and more negative implicative verbs (*avoid, decline, cannot/could not help, neglect, shun*, etc.) and eventually to other classes of verbs, as I have discussed elsewhere (1996a, 1996b, 2004a), with the result that from the late seventeenth century onwards gerundial complements replaced —either completely or in part— *to*-infinitives (and occasionally finite clauses) with a wide variety of verb classes: emotives (*fear, hate,*

like, love, etc.), retrospectives (*remember, forget*), suffering and bearing (*cannot/could not abide, bear*), intention and verbal communication (*propose*), and aspectuals (*cease, begin, start*), among others.

To sum up, English sentential complements have undergone important changes in the course of time. Furthermore, as will become apparent later, many of these changes are still in progress, thus giving rise to considerable regional and stylistic variation.

4. Non-cognitive work on the semantics of English complementation

Despite the many difficulties inherent in the semantic analysis of English complementation, there are a few points that most scholars and grammar books agree on (see, for instance, Huddleston 1984: 207ff, Quirk et al. 1985: 1061ff, 1191ff, Biber et al. 1999: 753-759, Huddleston and Pullum 2002: Chapter 14, Miller 2002: 44, 47). They include the recognition that matrix verbs with similar or related meanings (such as *wish* and *desire* or *remember* and *forget*) will typically take the same kind or kinds of complements; that verbs denoting volition (*intend*, *want*, *wish*, etc.) usually correlate with *to*-infinitives; that there is a tendency for certain *-ing* clauses to be associated with factuality, and for *to*-infinitives with non-factuality (compare, for example, *he enjoyed reading it* with *he hoped to read it*); that *that*-clauses typically occur with cognition predicates such as *know* or communication predicates such as *say*; or that there is an aspectual difference between bare infinitives and *-ing* clauses after verbs of sensory perception (*we saw Kim leave/leaving the bank*), with the *-ing* clause having progressive meaning.

Specially from the 1980s, however, functional linguists such as Givón (1980), Wierzbicka (1988: 23-168), Dixon (1991, 1995) or, more recently, Duffley (1992, 1999, 2000, 2003) have investigated in considerable detail the possibility that there may exist systematic correlations between the different syntactic realizations of complements and their semantics. Givón (1980, 1993), for instance, proposed a *binding hierarchy* based on iconic principles which predicted that the degree of "semantic binding" (i.e. the matrix subject's influence on the event expressed in the complement clause) is closely correlated with the degree of morpho-syntactic independence of the complement clause. Thus, examples (10)-(11) show that the stronger semantic binding of manipulation verbs (*make, tell, order, ask* etc.), as opposed to cognition verbs (*know, think*, etc.), accounts for the lesser syntactic independence from its matrix clause of the complement clause in (10):

> (10) He made her leave [manipulation verb; lesser syntactic independence in terms of tense-aspect-modality]

(11) He thought that she had left [cognition verb; greater syntactic independence in terms of tense-aspect-modality]

Givón's binding scale, which works well for a number of complement constructions, is not really being challenged in this paper, where my concern is rather with the kind of semantic contrasts between different complement types put forward by Wierzbicka in her influential work (1988) on English complementation. Among a number of illuminating observations, Wierzbicka argued that "[i]n most types of TO complements [...] there is a clear future orientation ('this will happen'), and there are reasons to think that this feature, too, should perhaps be regarded as part of the semantic invariant of all TO complement constructions" (1988: 165). She related (ibid.: 28-29) this future orientation of *to*-complements to the meaning of *to* in purposive clauses (e.g. *Mary went out to read the newspaper*) and also to its use as an 'allative' preposition (e.g. *Mary went to the library*). Implicit in this interpretation is of course the view that infinitival *to* retains some vestiges of its original role as a directional preposition meaning 'toward' (see Section 3 above), a claim that, as Langacker (1992: 304) has observed, appears to be basically correct if "it is formulated at the level of generality". It seems problematic, however, that Wierzbicka should detect a future component not just in uncontroversial cases such as *I want to go* or *I intend to win*, but also in sentences such as *he ceased to breathe* (1988: 81), *Mary continued to paint the car* (ibid.: 82), *it is wrong to lie* or *she was delighted to win* (ibid.: 165).

Wierzbicka also looked at gerundive complements, whose most basic meaning, she argued (ibid.: 69), is to indicate "sameness of time" between the process denoted by the matrix verb and the process denoted by the complement. Once again, though this certainly applies to *Mary enjoyed eating the steak* and to many other examples, sentences such as *I dread being summoned by the boss*, where *dread* refers to the future, or *I remember talking with John last year*, where the reference is to the past, seem to constitute clear exceptions to Wierzbicka's characterization. Despite these apparent difficulties, her work has exerted considerable influence on later cognitive research on complementation (see, for instance, Langacker FCG2: 439ff, Smith and Escobedo 2001, Hamawand 2003a).

Other influential analyses include Dixon's (1991, 1995) semantic approach to English complement clauses, and Duffley's (1999) account of the variation between infinitives and -*ing* clauses after aspectuals. As will be seen in the next sections, some of their claims recur in the cognitive literature on complementation.

5.   Cognitive inquiries

In keeping with CG's central assumption that grammar is inherently symbolic and meaningful, and that "all valid grammatical constructs have some kind of conceptual import" (Langacker FCG2: 338), cognitive research on complementation has tended to focus on a number of closely interrelated issues, namely:

a) the possibility that certain complementation types might be associated with schematic meanings, such that "the acceptability of a complementation pattern with a given verb would then be a consequence of the compatibility of the conceptualizations denoted by the main verb and the complementation pattern" (Taylor 2002: 433);

b) the correlation between the different syntactic realizations of complement clauses (i.e., in the case of English, *that*-clauses, *to*- and bare infinitives, and *-ing* clauses) and the type of *construal* (Langacker FCG2: 294ff) imposed on the complement scene by a given conceptualizer;

c) the extent to which certain features of complement sentences, such as the absence of an overt complementizer in *I saw her leave*, as opposed to its presence in *I saw that she left*, can be accounted for by appealing to the notion of *iconicity*, and specifically to the idea that the linguistic distance between expressions corresponds to the conceptual distance between them (cf. Haiman 1985).

In the sections that follow I will review how these various issues are dealt with in the chief cognitive studies on English sentential complements published so far, namely Dirven (1989), Langacker (FCG2: 31ff, 438-449, 1992: 304-308), Verspoor (1990, 1996, 2000), Smith and Escobedo (2001), and Hamawand (2002, 2003a, 2003b).[8]

5.1. Dirven (1989)

Dirven's preliminary approach to the semantics of English complementizers explores possible correlations between the form and meaning of different complement types. Most of the correlations proposed coincide with those mentioned in earlier treatments of the topic (see Section 4 above) and hence will not be discussed here.

In addition, Dirven draws attention to a few other more controversial points. Thus, regarding the choice between *to*-infinitives and gerundive clauses after some verbs, he notes (p. 120) that "*intend*, *plan* and *propose* can express volition, i.e. the desire that a new action should occur", in which case they take the infinitive, or "they

may merely denote the suggestion of such an action, which is much vaguer and therefore requires a gerund":

> (12) a. I intend to go tomorrow. (= I want to; this is what I have decided).
>   b. I intend going tomorrow. (= It's what I have vaguely planned).

According to Dirven, therefore, with many predicates the gerund tends to code more general, non individualized phenomena, a claim which is repeated on pp. 116 and 125-128 with respect to such varied structures as *parking the car is a problem* (versus *it's easy to park the car*), *he is used to getting up early* (versus *he used to get up early*), *staying at work all day means our having only sandwiches for lunch*, or *the garden needs watering*.

With aspectuals, the use of *to*-infinitives and gerunds is complicated by the fact that the gerund can easily become associated with the idea of ongoing activity which is inherent in the formally identical progressive. Dirven (pp. 129-130), like many other analysts before and after him, draws attention to this fact when he notes that, in cases like *the clock began striking twelve*, the focus seems to be on the continuous nature of the event described ("various strokes"), rather than on its inception, unlike in *the clock began to strike twelve*. Similarly, he explains (p. 131) the difference between *cease* V*ing* and *cease to*-infinitive by pointing out that "*cease* with gerund... denotes the stopping of some ongoing activity or process; with *to*-infinitive it implies that the cessation may be a permanent one":

> (13) a. The buses have ceased running (= for today, but they will start running again tomorrow).
>   b. The buses have ceased to run (= for ever; this denotes a new permanent situation).

5.2. Langacker (FCG2, 1992)

Langacker's brief analysis of English sentential complements is programmatic and, at least as regards his characterization of -*ing*, *to*- and *that*-clauses, largely inspired by Wierzbicka (1988). Thus, he agrees with Wierzbicka (see Section 4 above) in that it is an essential feature of -*ing* constructions that there should be "*some kind of temporal overlap* between the main- and subordinate-clause profiles" (FCG2: 445, 1992: 305); unlike Wierzbicka, however, he admits that that value may not be universal to the category of -*ing* clauses, but "only prototypical" (FCG2: 445).

With respect to *to*-infinitival complements, Langacker argues that their prototypical value is to "incorporate some notion of futurity [...]; attributing such a value to the complementizer *to* itself renders more transparent the nature of its relationship to the variant that occurs in purpose clauses (e.g. *He did it just to annoy her*) as well as the path preposition (*They walked to the store*). Inherent in all these notions

is the *path-goal* image schema" (FCG2: 446).

Again following Wierzbicka (1988: 164-165) Langacker claims that *to*-complements "are associated with a personal, subjective, first-person mode: 'I want', 'I think' or 'I know'" (FCG2: 446). The hallmark of *that*-complements, by contrast, is *objectivity*. In this context, the term *objectivity* is to be understood in the sense it has within CG (FCG1: 130-131), that is, as a notion contrasting with *subjectivity* and referring to a specific way of conceptualizing a scene. For instance, a sequence like *don't lie to me* (said by mother to child) represents a subjective construal; *don't lie to your mother* (uttered by the same speaker) involves objectification. Similarly, in (14a) below *that* "serves to objectify the conception of the proposition expressed" (FCG2: 447): Phil construes himself objectively, viewing his own activity in the same way that he would anybody else's. In (14b), by contrast, he views himself subjectively and "conceptualizes the subordinate process more from the vantage of one engaged in actually carrying it out" (FCG2: 448). The effect of *that* is thus "to step back from the situation [...] and construe it as an abstract object or **proposition** capable of being manipulated, evaluated, and commented on. Instead of being asserted, this proposition is taken as one participant in a higher order relationship [...], whence its role as a clausal subject or object" (FCG2: 35):

> (14) a. Phil definitely expects *that he will reach the summit by noon.*
> b. Phil definitely expects *to reach the summit by noon.*

Langacker also draws attention to the 'atemporal' construal imposed by complementizers on the complement event. Within CG, verbs are symbolic expressions whose meaning designates a process. The process involves "a continuous series of states representing different phases" and "construed as occupying a continuous series of points in conceived time" (Langacker FCG1: 244). For the conceptualization of this complex process the conceptualizer employs the mode of cognitive processing known as *sequential scanning* (Langacker FCG1: 145), in which a series of states are conceived non-cumulatively "through the successive transformation of one into another" (FCG1: 493). In the case of nouns and nominals, by contrast, the mode of conceptual scanning applied is *summary scanning* (Langacker FCG1: 145), which consists in the cumulative, *holistic* conceptualization of a scene in its entirety.

Complementizers change the way in which the component states of the verb are scanned. Their effect is to bring about a kind of *conceptual subordination* (FCG2: 440) of the process coded in the complement clause: rather than being viewed in its own terms as an independent object of thought, it is primarily considered for the role it plays within the superordinate relationship expressed by the main clause.[9]

Viewing the subordinate process as a main-clause participant implies a conceptual distancing whereby this process is construed *holistically* through summary scanning and manipulated as a unitary entity (Langacker FCG2: 439ff, 1992: 305-306). For this reason, Langacker argues, complementizers (i.e. *-ing*,[10] infinitival *to*, *that* or zero) "are plausibly analyzed as imposing an atemporal, perhaps even a nominal construal on the structures they combine with" (FCG2: 440).

5.3. Verspoor (1990, 1996, 2000)

Verspoor[11] argues (1996: 436) that

> in general terms [...] a causal schema plays a role in the use of verbs and their complement structures. This causal schema applies to both verbs denoting a type of causation, where the energy goes from subject to object and to verbs denoting mental spaces, where there is a two-way causal relation: the energy goes from subject to object, and the object in turn causes the mental state.

If the causal dependency coded in the overall construction is "very direct and immediate" (p. 434) a plain infinitive or *-ing* occurs, as illustrated in (15). If the causal relation is construed as indirect, which is less immediate, a *to*-infinitive occurs as in (16). If the conceptualizer does not construe the main clause subject and the complement event as causally related, a *that*-clause may occur as in (17):

> (15) a. *I made John leave.* [The force I exerted on John was direct, and the leaving event was a direct result of the force.]
> b. *I saw John leaving.* [The event caused my perception directly and immediately.]
> (16) *I ordered John to leave.* [The force I exerted on John was directly given to him, but through some medium (words), and the leaving event may occur some time after the order was uttered.]
> (17) *I ordered that John should leave.* [The force I exerted on John was not necessarily direct; John may have not been there and the order may have been given through a third party.]

Verspoor further tries to demonstrate that each of the complement constructions listed above can be characterized as "a complex radial category with some members that are more central, which have common properties that play a role in characterizing the basic schemas" (1996: 421). Her discussion focuses in particular on the composite structure **[subject] [verb] [-*ing*]**, which she interprets as "involving direct causal relevance —either in a concrete physical sense or abstract mental 'source' sense— between the subject and the event expressed by the *-ing* phrase" (ibid.: 449; see also 2000: 215). With regard to the schematic meaning of *-ing* itself, she adopts (1996: 437, 2000: 214) Langacker's definition (FCG2:

209) of the *-ing* participle in the progressive construction: *-ing* expresses an imperfective atemporal relation viewed from an internal perspective that does not include the initial and final states of the event.[12] Since the *-ing* symbolizes an event construed as ongoing, it is "natural that it be compatible with main verbs that express co-temporality of main event and subordinate event" (Verspoor 2000: 214; see also 1996: 438 and Wierzbicka 1988).

After this overall characterization, Verspoor examines the interplay between *-ing* complements and various classes of matrix verbs, namely those of **cause and action** —which she exemplifies with items such as *avoid* and *begin*, among others—, **sensory and mental perception** (e.g. *see, remember, imagine*), or **communication** (e.g. *acknowledge, confess, admit, deny, advise*). With respect to cause and action verbs, she grants (1996: 441-442) that the notion of direct causation "may not be quite so evident" with a verb like *avoid* (*I avoided hitting the tree*), whose analysis seems problematic in view of the fact that the semantically related *refuse* can only select a *to*-infinitive (*I refused to attend the meeting*). Verspoor solves this apparent contradiction by pointing out that "when one avoids hitting a tree, one intends not to hit the tree, but the intention not to hit the tree is simultaneous with the action that is supposed to prevent one from hitting the tree. However, when one refuses to leave, one intends not to leave at a later moment. In other words, *refuse* is related to a future event" (pp. 441-442). Concerning *begin*, Verspoor largely follows Wierzbicka (1988: 60) in asserting that with *begin* (*I began dancing*) the *-ing* structure expresses simultaneity and *begin* itself "symbolizes [...] the intentional state of the main clause subject" (1996: 442); the *to*-infinitive (*I began to dance*), by contrast, denotes a vague future orientation.

With respect to perception verbs (*I **saw** him crossing the street*, *I **imagined** sitting on the beach*), it is generally agreed (cf. Section 4 above) that the *-ing* complements following them have progressive meaning. This is also Verspoor's interpretation, whether the verb denotes sensory (*see, hear, feel*) or mental (*imagine, remember*) perception. In the latter case, she notes that the *-ing* structure symbolizes "that at the moment that the act of remembering or imagining is taking place, a mental representation of at least part of the event itself causes the recollection" (1996: 445).

Finally, Verspoor looks at communication verbs. Most of these (*announce, promise, say*, etc.) are compatible with *that*-clauses, since they signal acts of verbal communication that convey propositions. However, some communication verbs like *acknowledge, admit, confess* and *deny* may be followed by *-ing* structures as well, as in (18) below; in such cases, Verspoor claims that "the verb of communication expresses something other than a pure mode of speaking, namely the subject's attitude towards an event [...] the *-ing* complement symbolizes that the event (not

a proposition) expressed by the complement clause is experienced from very close by in the mind and affects in an abstract manner the emotional state of the subject" (1996: 448):

> (18) *Mary acknowledged not having done her work right.* [Mary expresses (not necessarily verbally) that she is not happy about the fact that the work was not done right.]

5.4. Smith and Escobedo (2001)

Like Verspoor before them, Smith and Escobedo set out to demonstrate that "most occurrences of *to* vs. *-ing* complements are semantically motivated and not arbitrary" (p. 561). Though their focus is on matrix predicates taking subjectless (PRO) complements as their only objects, as in *Mary wants to study German*, where PRO is coreferential with the matrix subject, they believe that their analysis could be extended to other kinds of complements as well.

Concerning *to*-infinitivals, in keeping with Langacker's views on the semantics of English complementation (see Section 5.2 above) they argue that in *to*-infinitivals *to* "marks the conceptual distance between the matrix and subordinate clauses by iconically separating them in the grammar" and reflects aspects of imagery "inherent in the source-path-goal image schema" (p. 561). This is most obvious with verbs expressing future intention and volitionality (*want, intend, hope, plan*, etc.). Verbs such as *refuse, decline, fail, fear, forget, neglect* and many others do not evoke motion, purpose or intent directed toward the attainment of a goal, but even in these cases Smith and Escobedo believe that *to* can be motivated from the source-path-goal imagery because a path's goal is construed holistically, as conceptually whole and complete; cf. Langacker's (1992: 305) visual analogy: "if we see a barn in the distance, at the end of a spatial path, we see the entire structure as a clearly bounded object". In the same way, a *to*-complement "receives a holistic construal vis-à-vis the main-clause relationship" (ibid.). Smith and Escobedo conclude, therefore, that the *to*-complements of verbs of declining and refusing "seem motivated primarily by the holistic notion" (2001: 554).

In order to characterize *-ing*, Smith and Escobedo start from Langacker's conception that an *-ing* complement "generally involves temporal overlap with the main-clause process" (Langacker 1992: 305; see 5.2 above). But they carry this notion one step further, to claim (p. 556) that *-ing* evokes a "general conceptual overlap" between the main and subordinate events, the exact nature of which depends on the matrix verb. They thus distinguish the four types of matrix predicates listed below:

(I) *Abhor, admire, appreciate, detest, dislike, enjoy, keep, (don't) mind, question,*

relish, resent, tolerate, understand. With these verbs "actual temporal overlap is evoked between the matrix and subordinate processes in that the latter are construed as happening simultaneously (or nearly so) with the former".

(II) *Admit, advocate, complete, deny, excuse, finish, forget, forgive, miss, quit, recall, recollect, recommend, remember, regret, resume, stop*. These "evoke prior rather than actual overlap between the matrix and subordinate processes, as illustrated in *I recommend studying linguistics with her* [...] By recommending or admitting something I indicate I have had prior experience with it (though one can recommend without prior experience)."

(III) *Anticipate, consider, contemplate, discuss, dream of, imagine, propose, reject, suggest, think (about)*. In an example like *Fran imagined/proposed living in the forest* "there is no sense in which the subordinate events ever actually occur [...] but *-ing* complements are motivated with these predicates because they evoke some kind of imagined conceptual overlap between the main and subordinate clauses."

(IV) *Avoid, delay, dread, escape, postpone, put off, resist*. Smith and Escobedo acknowledge that verbs in this class "appear to pose an intractable problem for a semantically-based account of complementation, because their complements do not appear to evoke any kind of overlap whatsoever with the matrix processes (whether temporal, prior, or hypothetical)". To solve this difficulty, Smith and Escobedo invoke Langacker's (1999: 297-315) notion of *subjectivity*, and argue that these verbs reflect subjective vs. objective overlap between the main and subordinate processes. Thus, "if I say that *Mary dreads or avoids doing something*, I imply that, although there is no overt objective overlap between the matrix subject Mary and the process she dreads or avoids doing, there ought to be such overlap".

To conclude their research on English complementation, Smith and Escobedo look in somewhat greater detail at a few verbs which can take either *-ing* or *to*-infinitival complements with apparently little difference in meaning, such as the aspectuals *begin*, *start* and *cease*, and the emotives *love, hate, prefer, like* and *can't stand*. Concerning *begin* and *start* they concur with Dirven (1989: 129-130; see 5.1 above) and Duffley (1999: 312ff) in that with *to*-complements the initial boundary of the subordinate process is especially salient, whereas "*-ing* complements imply temporal overlap with the first part of the matrix process" (2001: 559). They also rely on Dirven (1989: 131) and Duffley (1999: 325-327) in asserting that in sentences such as *it ceased to rain/raining* "the *to*-complement evokes that the subordinate process stops permanently [...] it is construed holistically in such a way that it is wholly completed". In contrast, the *-ing* complement evokes "that the rain has stopped for a while (and may resume). This reflects [...] that the cessation of the subordinate process is construed as momentary within an on-going process" (2001: 260). Finally, with respect to emotives they note, following Langacker

(1992: 305), that in *she always likes running/to run a marathon* the *-ing* complement "evokes the idea of actually running a marathon, while the *to*-complement focuses more on the idea of doing so" (2001: 561).

5.5. Hamawand (2002, 2003a, 2003b)

Hamawand's recent work on English sentential complements merely repeats many of the arguments put forward in Wierzbicka (1988) and in previous cognitive research. Complementizers are claimed to iconically encode different degrees of conceptual distance between the referents of the main and complement clauses (2002: 87, 2003a: 66), and are viewed as polysemous complex categories consisting of "a central prototypical meaning from which all other meanings are derived" (2003a: 70). As in Langacker (FCG2, 1992) or Smith and Escobedo (2001) it is assumed that *to*-marked complement clauses reflect aspects of the path-goal image schema, with *to* incorporating "some notion of subsequence or posteriority" (2003a: 74). In turn, the prototypical value proposed for *-ing* is "temporary ongoingness of an activity" (ibid.: 79), but extensions from this core meaning yield two different schematic values, namely *simultaneity*, where two durative events happen at the same time, and *anteriority*, where "the complement event temporally precedes the time of the utterance expressed by the main verb". Simultaneity is said to occur with verbs expressing a mental activity (*she considers accepting the offer*), with which "the complement event is mentally concurrent with the main event, even though physically it is not necessarily so", and with verbs expressing an emotional reaction (*Kate enjoys dancing the tango*); in this case, Hamawand points out that "if one enjoys doing anything, one takes delight or pleasure in it at the very time one is doing it". The semantic value 'anteriority' is found after verbs expressing communication (*he admits tripping her up*), since the event of making her fall "has actually occurred and happened before the event of admitting" (ibid.: 80). One may note in passing that, oddly enough, retrospective verbs like *remember* or *forget* (see also Hamawand 2002: 225-227) are grouped with *consider* and other matrix verbs of simultaneity, rather than with *admit* and verbs expressing anteriority, despite the fact that with retrospectives the reference of the *-ing* complement (e.g. *I remember him saying that it was dangerous*) is clearly to past time and thus contrasts with the future reference of the *to*-infinitival pattern available with the same verbs (e.g. *I will remember to post the letter*). Finally, as regards *that*-clauses Hamawand (2002: 61-62, 66-67, 71) closely follows Langacker (FCG2: 35, 446-448) in arguing that they indicate an objective construal of the complement scene; non-finite complements, by contrast, conceptualize the complement content subjectively.

6. English sentential complements: facts and fiction

Possibly the first thing to attract the reader's attention when reviewing the cognitive literature on complementation is the nature of the evidence adduced to support the analyses. Considering the importance attached by CG to "the actual use of the linguistic system" (Langacker FCG1: 494) and to the "context-dependent variants" of linguistic expressions (cf. Achard 1998: 25), it comes as a surprise that, without a single exception, the research examined in the preceding section is based on very short invented sentences rather than naturally-occurring discourse. One should also recall that, as pointed out earlier in this paper, CG has not hesitated to claim that the organization of its semantic theory in terms of cognitive domains enables it to account in a natural and straightforward manner for aspects of meaning which prove intractable for other models, as is the case with pragmatic specifications or sociolectal variation. How these extralinguistic aspects of meaning can manifest themselves in the type of data employed by cognitivists is far from clear.

A propos of this problem, Noël (2003: 347) complains in a recent paper about what he calls *semantic extremism*: "after a few decades of syntax with as little meaning as possible, [...] it has become fashionable to adhere to the creed that literally everything in syntax is meaningful". Semantic extremism is evident in all functional, as opposed to formal, models of grammar, but among practitioners of CG in particular it has become axiomatic that "every lexical and grammatical choice has semantic import" (Langacker 1999: 339). Discovering the exact conceptual import of each linguistic expression is therefore the primary task for cognitive grammarians, but this task is being carried out, in most cases, on the basis of linguistic introspection and intuition rather than empirical evidence. Herein lies the chief source of the inaccuracies which can be detected in the cognitive research on English sentential complements. It is to these inaccuracies that I now turn.

6.1. Some contrasts between infinitival, gerundive and that-clauses

As already noted, the different syntactic realizations of sentential complements are treated within CG as the reflection of variations in the way of construing the complement scene. These differences in construal, according to Langacker (1999: 339), constitute "genuine differences in meaning, construal being central and essential to linguistic semantics".

It is not my intention to contradict the above view: there is a clear functional distribution of *-ing*, *to-* and *that*-clauses with many classes of verbs, and this must be indicative of the existence of semantic differences between those complement types. But while this may be valid as a generalization, there are also examples where

their use appears to be governed by factors that can hardly be considered 'meaningful' and which in some cases are rooted in the earlier history of *-ing*, *to*- and *that*-clauses. To illustrate the point I am making, let's consider in the first place infinitival and *that*-clauses. From the earliest written records (cf. Traugott 1992: 234ff, Fischer 1992: 312ff), these two types of complement lacked one of the basic characteristics of full-fledged nominals, namely, they could not be governed by prepositions. This must have imposed severe limitations on the structure of English, especially after the enormous expansion in the use of prepositional phrases that took place in Middle English as a consequence of the decay of Old English case inflections. In the opinion of many scholars (cf. Miller 2002: 345, Fanego 2004a), the development of the nominal gerund into a verbal form from about 1300 was either initiated or promoted by systemic pressure to develop a clausal pattern capable of occurring after prepositions, as seems to be suggested by the fact that verbal gerunds occurred earliest in that environment. In the course of time, verbal gerunds have spread to non-prepositional contexts and have become common as subjects, objects, or predicatives, but even today gerunds dependent on a preposition represent around 68 per cent[13] of all gerund uses:

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(19) FLOB [Humour] R06 150: the Mirror sees The Royalty Corp as an essential industry and thus one that can drain the public purse *without too many questions being asked.*

(20) FLOB [General Fiction] K04 22: one of the paradoxes *of being an army psychiatrist* is that you don't actually get very far...

In other European languages the equivalents of the gerundive clauses in (19)-(20) would take the form of finite clauses or infinitives. Spanish, for instance, would use, respectively, a finite clause introduced by *que* "that" ("sin *que* se hagan muchas preguntas") and an infinitive ("de *ser* psiquiatra del ejército"). In the specific environment under consideration, therefore, English and Spanish opt for different syntactic constructions, but it seems hard to accept that these formal choices can be the reflection of differences in the way in which the two languages 'construe' or conceptualize the complement scene. The correct analysis, as I see it, is to admit that English gerundive clauses are triggered automatically by the presence of a governing preposition and thus stand in complementary distribution with *that*- and *to*-infinitival clauses; whatever semantic distinctions may exist between those various complement types become neutralized in some of their uses.

Another important nominal feature which *that*-clauses also lacked in earlier stages of the language was the capacity to function as pre-verbal subjects; in other words, sequences such as PDE *that Jane came yesterday is true* are not found in either Old or Middle English (cf. Fischer 1992: 312-313). In contemporary English this restriction has been somewhat relaxed, but pre-verbal *that*-clauses continue to be

extremely infrequent, as shown by Biber et al. (1999: 674-676). In the Longman Spoken and Written English Corpus (LSWE), which contains over 40 million words of text representing several written and spoken registers, extraposed *that*-clauses (e.g. *it is true that Jane came yesterday*) occur overall more than 200 times per million words; pre-verbal *that*-clauses, by contrast, occur only 10-20 times per million words in writing and "are virtually non-existent in conversation" (Biber et al. 1999: 676). These data are in agreement with my own findings drawn from a small corpus comprising 120,000 words of written British and American English.[14] I recorded 71 extraposed subject *that*-clauses (37 in AmE, 34 in BrE) and just one in pre-verbal position (in BrE):

> (21) 1991 FLOB [Humour] R06 7: A theory currently going the rounds of the diasporate Fleet Street is that the Murdoch tabloids have got it in for the royals. *That the glorious republic, when it comes, will be heralded by a rollicking Ron Spark leader ("The Sun Says Give Us Liberty, Folks, or Give Us Death!")* is, apparently, finally proved by the Sun's publication, last week, of a photograph showing the Duke of York as only his mother, his wife and a few dozen hopeful debs had previously seen him.

Extraposition of complement clauses has to do with pragmatic and discourse factors (cf. Biber et al. 1999: 677-678, 896-898, Huddleston and Pullum 2002: 1367-1372, 1403-1407). There is a tendency in English for information which is familiar to be placed before that which is new ('the *information* principle'), and for placing clauses and other heavy constituents after the main clause predicate ('the *end-weight* principle'). Since heavy constituents are more likely to carry new than old information, the information principle and the principle of end-weight often reinforce each other. Complement clauses thus tend to appear in end-position not just because they are long, but also because they typically encode new information. By contrast, pre-verbal subject clauses are more likely to encode information which is discourse-old or at least presupposed to be familiar to the addressee. In addition, irrespective of other considerations, pre-verbal position may be obligatory when, as is the case in (21) above, the main clause verb is followed by a series of complex constituents; in such cases, extraposition of the subject clause would place a great burden on the short-term memory of the receiver, who would need to process all intervening constituents before finally reaching the logical subject of the main clause (i.e. the extraposed clause).

Apart from confirming the statistical tendency for finite subject complements to be extraposed, what is interesting about the data retrieved from my corpus is that it shows that whenever a subject clause with an explicit subject needs to occur pre-verbally in written English, *the fact that*-constructions and verbal gerunds serve as convenient alternatives to *that*-clauses.[15] Thus the American English texts I

examined contained no *that*-clauses in subject position, but yielded an isolated instance of a *the fact that*-construction ((22)). The British texts included, apart from the *that*-clause in (21) above, one instance of a *the fact that*-construction and the two gerunds quoted as (23)-(24).

> (22) 1992 FROWN [Press Reportage] A07 199: The congress is expected to promote some younger, more reformist leaders into the top echelons of the party. *The fact that the party has officially closed the chapter on Mr. Zhao before the congress* suggests that hard-liners opposed to even a partial clearing of his name were hoping to use that strategy to prevent any newly elected reformist leaders from reopening the case,

> (23) 1991 FLOB [Humour] R06 72: Once a tabloid royal-watcher who had just signed a piece to the effect that *Prince Edward's leaving the Royal Marines* was but a step away from his appearance in the Danny La Rue Follies spent some time trying to convince me that Edward had been on the phone to him as soon as the piece appeared congratulating him on his journalistic acumen.

> (24) 1991 FLOB [General Fiction] K04 147: There was a ship sailing past, quite a long way out, in the estuary, and I looked at this little scrap of ribbon floating and I looked at the ship, and I thought that *me trying to stop the war* was a bit like trying to stop the ship would have been. You know, all they'd've seen from the deck was this little figure jumping up and down, waving its arms, and they wouldn't've known what on earth it was getting so excited about.

The fact that-constructions, being headed by a noun, are patently more 'nominal' than *that*-clauses. So are verbal gerunds, as shown by the fact that they can take subjects in the genitive case (cf. *Prince Edward's* in (23) above) and retain other typically nominal properties such as resistance to extraposition[16] (cf. (25)) or the ability to follow the verb in subject-auxiliary inversion constructions (cf. (26)). All of these features, which evoke their nominal origin, serve to distinguish them syntactically from *that*-clauses and explain why, unlike *that*-clauses, they can readily function as pre-verbal subjects.

> (25) a. *It surprised me *his having a hat*.
> b. It surprised me *that he had a hat*.

> (26) a. Did *his having a hat* surprise you?
> b. *Did *that he had a hat* surprise you?

The two gerund clauses in (23)-(24) are interesting in yet another respect, namely in that they reflect the varied nature of the extra-semantic factors which may influence the choice of complement at any given time. Notice that both gerunds are themselves embedded in a *that*-clause (*that Prince Edward's leaving the Royal Marines…/that me trying to stop the war…*), hence a sequence of two identical

subordinators (e.g. *that that I should try to stop the war...*) would have been difficult to process and also stylistically awkward.

To conclude this brief survey of the structural contrasts between *that, -ing* and infinitival clauses, let us now check whether the corpus data adduced so far confirm Langacker's proposal (cf. Section 5.2 above) that the basic semantic contribution of *that*-clauses is *objectivity*, in that they "serve to objectify the conception of the proposition expressed" (FCG2: 447) and to "construe it as an abstract object [...] capable of being manipulated, evaluated, and commented on" (ibid.: 35). As already noted, the term *objectivity* is here to be understood in the sense it has within CG (cf. FCG1: 130-131), that is, as a notion contrasting with *subjectivity* and referring to a specific way of conceptualizing a scene. For instance, according to Langacker a sequence like *Phil expects to come* represents a subjective construal; *Phil expects that he will come* involves objectification. However, it is hard to see in what way the *that*-clause in (21) above is any more objective than the two verbal gerunds quoted as (23)-(24), so that we just have to take Langacker's word for both the validity and relevance of this distinction. On the other hand, the capacity of *that*-clauses to be evaluated and commented on is not unique to them, for as is well known (cf., inter alia, Noonan 1985: 117, Duffley 2003: 343-345) gerund clauses are very often dependent on commentative predicates; witness *seeing Jane was fun*, *writing letters is not easy* or the two corpus examples ((23)-(24)) under discussion, where the matrix predicates are commentatives (i.e. *was but a step away.../was a bit like trying...*). If it were true that the complementizer *that*, or *that*-clauses in general, convey an invariant meaning distinct from the prototypical meaning of other complementizers, one may wonder why we have such a hard time discerning it in specific instances such as those examined in this section.

6.2. Non-finite clauses as object complements[17]

As we have seen in Section 5 of this paper, most of the cognitive literature on complementation starts from the conception that "principles of iconicity play a role in each kind of complement construction" (Smith and Escobedo 2001: 550), and views complementizers as polysemous complex categories consisting of "a central prototypical meaning from which all other meanings are derived" (Hamawand 2003a: 70). Since the instances of a complex category vary in terms of their 'distance', i.e. the extent to which a given member [A] must be extended or elaborated to yield [B], prototype theory thus affords a convenient tool to account for apparent exceptions to the general meaning ascribed to each complementizer. As Hamawand (2002: 91-92, 2003a: 71) puts it,

> the semantic extensions of a given complementiser may involve some twists or bends. One extension may well spawn a further extension that obscures the difference

between two otherwise distinct domains. The new extension may spawn an extension that is not even directly related to the original concept.

In the case of the complementizer *to* the proposal of all cognitive work is that *to* reflects aspects of the source-path-goal image schema and hence incorporates "notion[s] of futurity" (Langacker FCG2: 446), future orientation (Verspoor 1996), "conceptual distance" (Smith and Escobedo 2001: 561), or "subsequence or posteriority" (Hamawand 2003a: 74). In the case of *-ing*, the cognitive literature generally endorses Wierzbicka's (1988: 69) notion that its most basic meaning is indicating "sameness of time" between the matrix verb and the process denoted by the complement. We thus read that *-ing* prototypically indicates "temporal overlap" (Langacker FCG2: 445, 1992: 305); that it symbolizes an event construed as ongoing and is hence "compatible with main verbs that express co-temporality of main event and subordinate event" (Verspoor 2000: 214, 1996: 438); that it evokes "a general conceptual overlap" (Smith and Escobedo 2001: 556); and that it designates "temporary ongoingness of an activity" and "simultaneity" (Hamawand 2003a: 79). The many examples of *-ing* clauses that cannot be covered by this characterization, such as those listed below, are therefore explained as extensions or elaborations from this central meaning:

(27) Jack remembers seeing Mary.
(28) I admit tripping her up.
(29) I enjoy watching movies.
(30) I abhor living in the country.
(31) The island ceased farming sugarcane.
(32) Jack avoided meeting Mary.

A preliminary indication that this way of accounting for the complexities of English sentential complements yields less than satisfactory results is the fact that the views of cognitive linguists on one and the same predicate differ enormously at times and can even be clearly contradictory. One would expect scholars working on the same field and within the same theoretical framework to arrive at similar conclusions regarding the semantics of specific complement-taking verbs, but this is not the case. To name a few examples, let's first consider *remember* V*ing*. According to Smith and Escobedo (2001: 557), this evokes "prior rather than actual overlap between the matrix and subordinate processes". For Verspoor (1996: 445-446), by contrast, a sentence such as *Martha remembered paying the bill* is not substantially different from one containing a verb of sensory perception (*I saw John entering the building*); in both cases the perception, whether real or imagined, is "direct". Hamawand (2002: 225, 227) concurs with Verspoor in assigning *remember* to a class of predicates with which "the complement event is mentally concurrent with the main event" (Hamawand 2003a: 79), but he adds the

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unjustified qualification that in the pattern *remember* V*ing* the complement event "implies less certainty" (2002: 192) about the truth of the complement content than in the related construction with a finite clause *Martha remembered that she had paid the bill*. Yet *remember*, being a factive predicate, entails the realization of its complement, so it is not easy to discern different 'degrees' of certainty in the clauses following it.

Another case in point is *admit* and related communication verbs. For Smith and Escobedo (2001: 557) and Hamawand (2002: 227, 2003a: 80), the -*ing* complements occurring with them evoke anteriority. Verspoor (1996: 448), by contrast, argues that *acknowledge, admit, confess* and *deny* are not pure communication verbs, but rather contain an attitudinal component which is symbolized by the use of a following -*ing* clause. Thus in a sentence such as *Mary acknowledged not having done her work right* there exists direct causal relevance — and hence some form of simultaneity— between the emotional state of the subject and the event expressed by the -*ing* complement. One wonders, of course, not just how it is possible to speak of simultaneity in a construction where the complement clause unambiguously refers to past time, but also what kind of emotional component is to be discerned in communication verbs such as *mention* (*he mentioned having read it in the paper*) or *report*:

> (33) 1992 FROWN [Belles Lettres/Biographies/Essays] G33 22: We can catch glimpses of this involvement through her letters, from the frottages in the manner of Max Ernst *that she reports sending to Marianne Moore*, to the comic descriptions of herself as a painter in competition with her Brazilian cook, on down to the older self that made a box in homage to Joseph Cornell.

Also worthy of note are the disparate interpretations proposed for the -*ing* clauses selected by negative implicative verbs such as *avoid*, *escape* or *postpone*. As Smith and Escobedo (2001: 558) recognize, these verbs "appear to pose an intractable problem" to the widespread cognitive view that -*ing* complements evoke some kind of overlap between the matrix and subordinate processes. To solve this difficulty, Smith and Escobedo appeal to the notion of subjectivity: if I say *Mary avoids doing something* "I imply that, although there is no overt objective overlap between the matrix subject Mary and the process she [...] avoids doing, there ought to be such overlap". Verspoor's bizarre explanation for the same set of predicates, already quoted in these pages, is simply that "when one avoids hitting a tree, one intends not to hit the tree, but the intention not to hit the tree is simultaneous with the action that is supposed to prevent one from hitting the tree" (1996: 441-442). Finally, for Hamawand (2002: 210) *avoid* and related verbs "present a perfect semantic fit with the -*ing* gerundial complement clause" because they "display an important semantic property of their context-free meaning [...] pertaining to

simultaneity, which implies that the thought of the event or the mental recollection of such an event takes place as concurrent with the event denoted by the main verb" (p. 211).

In essence, what the previous analyses show is the unsoundness of starting from the preconceived notion that complementizers and complement clauses have one central use and then attempting to explain all other uses in terms of it. In the case of -*ing*, the choice of 'temporal overlap' as the prototypical central value appears particularly erroneous in view of the fact that, as already noted in Section 3 above, historically the earliest English verbs to govern gerundive object clauses were, precisely, negative implicatives such as *avoid, escape*, or *refrain*, whose complements, as will be apparent to anyone, do not evoke any kind of overlap with the matrix processes, whether temporal, prior, or hypothetical. Cognitive linguists, if they wish to offer a convincing semantically-based account of English complementation, could surely benefit from looking at the complex historical processes that have been affecting English complement clauses for several centuries. Failing to do so leads to proposals regarding complement use that have no basis in linguistic reality, as is easy to demonstrate by confronting some of the introspection-based analyses reviewed in this paper with actual data. This will be done in the next section.

6.2.1. *Object complement clauses and linguistic reality*

As pointed out in Section 3 above, around 1300 English developed a new type of clausal complement, namely, gerundive -*ing* clauses. Initially, gerundives were chiefly restricted to prepositional environments (e.g. "*on hearing a cry*, she dashed into the garden"), but from about the middle of the sixteenth century they became available in object position (Fanego 1996a, 2004a) and have since been spreading at the expense of infinitival clauses, and occasionally of finite clauses. The result is that in PDE a very large number of predicates have come to govern -*ing* clauses as objects, either preferentially or exclusively.

This important syntactic shift, which is gradually transforming the grammatical core of standard English, is far from complete, as we know from recent research by Mair (2002, 2003), Cuykens (2004), De Smet (2005), or Fanego (forthcoming). As regards the variables controlling the spread of gerundives, the semantics of the complement-taking verb obviously plays an important role (cf. Fanego 1996a; Rudanko 1998): complements of certain types of verbs are seen to be affected first or more fully by this historical change, while those of other types of verbs are affected later or less fully. Semantics alone, however, does not suffice to explain everything, as is shown by the fact that verbs of related meaning can select different complements in PDE; witness pairs like *refuse* (*I refused to speak to her*) and *avoid*

(*I avoided speaking to her*), or *enjoy* and its synonym *like*: while *enjoy* can only take gerundives, *like* allows both gerunds and *to*-infinitives. On the whole, though further research on this complex area of English grammar is still needed, it seems clear that the expansion of -*ing* clauses across the grammar of English is governed by a host of factors. Some that have been mentioned in the literature include:

a. style (informal registers can promote the use of gerundives; cf. Fanego 1996a);

b. social and regional variation (the rate of spread of -*ing* clauses is not the same in all varieties of English; cf. Mair 2002, 2003);

c. degree of *entrenchment* (Langacker FCG1: 59-60):[18] Cuykens (2004) and Cuykens and De Smet (2004) have recently suggested that entrenchment may play an important role in the continuing competition between gerund and infinitive, in that high entrenchment appears to have a conservative effect, so that the infinitive —the historically older form— tends to be retained in contexts where it is most entrenched (i.e., after highly frequent emotive verbs (*like*, *love*) and in semi-fixed expressions and strong collocations (e.g. *I hate to tell you this,*)), but is gradually being ousted in other contexts.

Admittedly, research on the development of English complement clauses is recent, yet one would expect cognitive linguists interested in complementation to be at least aware that this is an area of grammar where important changes are in progress, so that their intuitions about usage might turn out to be wrong when confronted with actual data. To take one example, the verb *intend* is usually seen in the cognitive literature as a prototypical verb of intention and volition that "present[s] a perfect semantic fit" (Hamawand 2002: 204; see also Smith and Escobedo 2001: 553) with *to*-infinitival constructions, as is also the case with *want, wish* or *aim*. Only Dirven (1989: 120; see also Section 5.1 above) points out that *intend* can sometimes be followed by a gerund, but in this case, he claims, *intend* does not express volition, i.e. the desire that a new action should occur, but "merely denote[s] the suggestion of such an action, which is much vaguer and therefore requires a gerund". On this interpretation, therefore, an utterance such as *I intend going tomorrow* would be roughly equivalent to "Going tomorrow is what I have vaguely planned".

To check whether Dirven's hypothesis was correct I conducted a computer search of four matching corpora of written British and American English, namely LOB, BROWN, FLOB and FROWN.[19] The first two are one-million-word samples compiled in 1961 and containing British and American texts from fifteen different register categories; in the 1990s they were replicated by a Freiburg-based research group (for details see Mair 2002), who eventually made FLOB (sampling year:

1991) and FROWN (sampling year: 1992) available to the linguistic community. The interval of thirty years between the two original corpora and their Freiburg updates broadly corresponds to one generation and is usually considered the minimum period required to clearly identify and document linguistic change in real time.

The results of my search on *intend* are shown in Table 1. Though the number of examples is too small to be statistically significant, it nevertheless suggests that in British English gerundives after *intend* are slowly gaining ground, despite the fact that this, as a 'prototypical' volitional verb, might be expected to collocate only with infinitives. Yet, as repeatedly noted, *-ing* clauses have been encroaching upon *to*-infinitives for the past five hundred years, so the increase of *-ing* with *intend* is probably to be interpreted merely as another manifestation of this widespread linguistic trend. In the case of this verb, informal registers seem to be leading the change, to judge from the fact that the six occurrences of *intend* V*ing* reflected in Table 1 occur in Mistery and Detective Fiction (1 ex.), Adventure and Western (3 ex.), Skills/Trades/Hobbies (1 ex.), and Press Editorial (1 ex.).[20] What is clear, at any rate, is that Dirven's proposed semantic distinction between *intend to*-infinitive and *intend* V*ing* is not corroborated by the corpus evidence, as can be seen from (34):

> (34) 1991 FLOB [Press Editorial] B24 247: Several years ago, the gentleman who lived opposite me applied for permission to build a bungalow in the rear of his garden to enable his elderly aunt to live near him. Permission was refused on several grounds, but now, it seems, these reasons do not apply any more as the gentleman in question has since sold the house which has been bought by a builder *who intends building a three-bedroom house with double garage in the rear garden*. Permission for this building has been granted...

	BrE	**AmE**
1961	64:1	44:0
1991/1992	81:5	60:0

TABLE 1: To-*infinitive vs V*ing *after* intend *in four matching corpora*

Another complement-taking predicate which has often attracted the attention of cognitive linguists is *cease*, since it can select both gerundives and infinitives without any apparent different in meaning. Following Dirven (1989: 131; cf. Section 5.1 above), both Smith and Escobedo (2001: 560) and Hamawand (2002: 266) claim that with the *to*-infinitive *cease* implies that the cessation of the action is permanent, while with the gerund "the cessation of the subordinate process is construed as

momentary within an on-going process" and "may resume" (Smith and Escobedo 2001: 560). But as in the case of Dirven's predictions concerning *intend*, this intuition is far from being correct; the single occurrence[21] of *cease* V*ing* in either FLOB or FROWN (see Table 2) clearly refers to the permanent cessation of an activity:

(35) 1992 FROWN [Miscellaneous] H13 100: Due to a number of recent developments, we have an abundance of idle farmland and a growing rural labor pool. Last Friday, the big island's second largest sugar plantation, Mauna Kea Agribusiness, announced that *it would cease farming sugarcane*. Beginning in November, nearly 9,000 acres of caneland will be converted to other agricultural uses. One-third of the land producing sugarcane 20 years ago is no longer being cultivated today.

	BrE	AmE
1991/1992	19:0	10:1

TABLE 2: To-*infinitive vs V*ing *after* cease *in two matching corpora*

A couple of aspectual verbs also licensing gerunds and *to*-infinitives are *begin* and *start*. As we have seen in Section 5 above, it has become customary in the cognitive literature to claim that when *to*-complements follow these verbs (e.g. *I began to read the novel*) the initial boundary of the subordinate process is especially salient, whereas the -*ing* gerund "draws attention to the fact that the activity is in operation" (Hamawand 2002: 263; see also Dirven 1989: 129-130, Smith and Escobedo 2001: 559). However, recent research by Mair (2003) suggests that the variation between infinitives and gerunds with *begin* and *start* can no longer be regarded as primarily a phenomenon of linguistic *micro-structure* (lexical meaning of the two verbs, semantics of infinitival vs. gerundial complements) but as *macro-structural* variation conditioned by stylistic and sociolinguistic factors. In other words, what happens is that -*ing* complements after these verbs are rapidly increasing in written American English, as shown in Table 3; the trend is not yet clearly discernible in written British English, but may well be manifested in the near future in view of the pressure which American English is currently exerting on the other great national standard (cf. Mair and Leech forthcoming). In fact, the evidence retrieved from COLT, a 500,000-word corpus containing conversations by London teenagers recorded in 1993 (cf. Hofland et al. 1999), reveals that in certain varieties of spoken British English -*ing*, with 132 ex., as against only 27 ex. of *to*-infinitives, is already the preferred complement type after *start*.

	BrE	AmE
1961	260:23	230:50
1991/1992	204:20	202:95

Note: BrE vs. AmE 1961 p < 0.001; BrE vs. AmE 1991/92 p < 0.001, BrE diachronic not significant, AmE diachronic p < 0.001.

TABLE 3: To-*infinitive vs V*ing *after* begin *in four matching corpora (from Mair 2003: 336)*

	BrE	AmE
1961	36:52	47:49
1991/1992	49:59	59:110

Note: AmE diachronic p < 0.05, all others not significant.

TABLE 4: To-*infinitive vs V*ing *after* start *in four matching corpora (from Mair 2003: 336)*

My last example involves *prevent* and other three-place negative implicative verbs (e.g. *hinder, stop,* etc.) allowing a choice between a complementation pattern with NP V*ing* and one with NP *from* V*ing*. This type of variation has been seen by both functional and cognitive linguists as exemplifying the iconic correlation between linguistic distance and conceptual distance. Thus Hamawand (2002: 81, 88, 2003a: 66-68), following an earlier suggestion by Dixon (1991: 236), argues that *Dora prevented Clark finishing his job* and *Dora prevented Clark from finishing his job* are "different constructions each with its own semantic import" (Hamawand 2002: 88): the former is likely to describe a situation in which Dora is portrayed "as employing some direct means in her action, e.g. by not letting him make use of the files", while the latter describes a situation in which she is portrayed as using indirect means in her action, "e.g. by using her influence to make sure he did not have any access to the files". Hence the two events in the first sentence are conceptually more integrated than those in the second sentence".

Once again, the corpus evidence is far from confirming Hamawand's hypothesis. To start with, in many varieties of English, including American English, only the *from* pattern is available, as can be seen in Table 5. In British English, where both *prevent* NP *from* V*ing* and *prevent* NP V*ing* have been on record for a long time (cf. Visser 1963-1973 §§ 2092, 2108, Mair 2002), the distribution of the two patterns is clearly unstable, with the *from*-less pattern quickly spreading at the expense of the pattern with *from*.

	BrE	AmE
1961	36:5	47:0
1991/1992	25:23	36:1

Note: BrE diachronic p < 0.001; all other contrasts not significant.

TABLE 5: Prevent *NP* from *V*ing *versus* prevent *NP* *V*ing *in four matching corpora*[22]

Even more importantly, as aptly noted by Mair (2002: 114), the iconic factor proposed by Dixon (1991) and Hamawand (2002, 2003a) to distinguish between the two variants is difficult to perceive in most contexts, and is clearly irrelevant in the numerous cases in which either the subject of *prevent* or the NP following it are inanimate or denote an abstraction, as in (36)-(37):

> (36) 1991 FLOB [Press Editorial] B17 108: Nor is there any legislation *that can prevent Mr Major being something of a lame duck leader*, lacking total authority within his own party, during a parliamentary session which is his own choice.
> (37) 1991 FLOB [Science] J40 175: The legacy of Italy's imperial, religious or cultural past was regarded by futurists as *a dead weight preventing her from becoming a technologically advanced, militarily strong national community.*

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7.   Concluding remarks

To conclude, this paper shows that the wide-ranging nature of the claims in cognitive linguistics creates a particular need for converging evidence from empirical work that can help substantiate those claims. A theory of language that prides itself on its attention to actual linguistic use is expected to rely on facts, rather than on one or two people's intuitions about a few sentences. Fortunately, there are welcome signs that cognitive researchers are becoming increasingly aware of the importance of corpus data, as I pointed out in Section 1 of this paper, and as seems to be indicated by recent cognitive work with a firm empirical basis, such as Deignan (1999), Peña (2003) or Ruiz de Mendoza (2004), among others.

Additional Note

Notes

1. This paper is dedicated to Günter Rohdenburg on the occasion of his 65th birthday, in recognition of his important work in the field of English sentential complementation. Parts of the material included here were presented at the Fourth Conference of the Spanish Cognitive Linguistics Association (AELCO/SCOLA, Zaragoza 13-15 May 2004), and at the Seventh International Conference of the European Society for the Study of English (ESSE7, Zaragoza 8-12 September 2004); I would like to thank the participants in these conferences for helpful discussion. Thanks are also due to Iraide Ibarretxe, Carlos Inchaurralde and Francisco Ruiz de Mendoza, and to Celestino Deleyto, Susana Onega and the organizers of ESSE7 for their kind invitation to speak at such a well-run and intellectually productive event. I am also grateful to the Autonomous Government of Galicia (grant no. PGIDT01PXI20404PR) and the Spanish Ministry of Education and Science (grants nos. BFF2001-2914 and HUM2004-00940/FILO) for generous financial support.

2. The prototype is usually the most frequent sense and the one that "is likely to be activated in preference to others in a neutral context" (Langacker 1988b: 51).

3. The sense 'arena' constitutes an extension relative to 'circular object' or 'circular entity' because it does not incorporate the specification of circularity (boxing and wrestling rings are typically rectangular).

4. On Egan (2003) see footnote 8 below.

5. Interrogative complements (*I'm wondering why to go at all*, *I doubt whether they knew*) present few problems of analysis and hence have been left out of the discussion.

6. Not all grammars of Present-day English make a distinction between these two types of -*ing* clause; see, for instance, Huddleston and Pullum (2002: 82-83, 1187ff, 1220-1222), who lump them together under the label *gerund-participial*. Yet though the inflections for gerund and participle have syncretized in PDE, gerundive and -*ing* participle clauses still differ as regards case marking on the subject NP, with the genitive being an option only with gerundives (compare *I resented their going without me* with **we saw Kim's leaving the bank*).

7. For the label see Karttunen (1971).

8. The work of Taylor (1996: 265-286) and Heyvaert (2003) on -*ing* nominalizations falls beyond the scope of this paper and will not be examined here. Also excluded is Langacker's (1999: 317-360) research on the variation displayed by verbs of the *believe* type between infinitival and finite complements, as this has been discussed in detail by Noël (2003). One further exclusion is Egan (2003), a locally published Ph.D. dissertation submitted to the University of Oslo which makes use of a (loosely) cognitive framework. Egan's 434-page-long analysis of infinitives and gerunds in object position is based on data retrieved from the British National Corpus, but otherwise exhibits the same flaws as the cognitive work on complementation reviewed in later sections of this paper, in that his claims regarding the distribution of gerunds and infinitives tend to be made in advance, with the corpus examples being then interpreted in that light. Thus he asserts on p. 37 at the beginning of his dissertation that *to*, unlike -*ing*, "points to one of several theoretically possible options as the preferred option", a characterization which is then elaborated in the remaining chapters, but not convincingly.

9. In other words, according to Langacker (p. 441) the subordinate clause is backgrounded and "the main clause [...]

imposes its processual profile on the overall expression". It should be noted, however, that recent research by Diessel and Tomasello (2001) on child language acquisition, and by Sandra Thompson (2002) on English conversation suggests that in many important cases this is actually a misconception. Thus Thompson (2002: 155) argues that conversational English provides no evidence that finite complements in object position (e.g. *I think they're relightable*) are in any sense subordinate. Instead, what the data show is the frequent use of "a schema consisting of an epistemic/evidential/evaluative phrasal fragment and a clause", with the fragment expressing speaker stance toward the content of the clause. Interesting as Thompson's findings are, I will not explore them any further in the sections that follow, since there can be no question that non-finite complements are embedded in a higher matrix, and it is with non-finite, rather than with finite, complements that this paper is chiefly concerned.

10. As regards the 'construal' of the *-ing* complementizer, Langacker's discussion is far from clear. In the case of *-ing* participle clauses depending on perception verbs (*I saw the ship sinking*) he asserts that we "can attribute to *-ing* precisely the same value that it has in the progressive construction" (FCG2: 443), that is, *-ing* "focuses on the interior of the verbal process [and] imposes on that process a profile which comprises a series of component states but excludes both endpoints" (1992: 306). This has been misinterpreted by most cognitive linguists as applying to **all** *-ing* complements, whether gerundive or participial; witness in this respect Verspoor (1996: 437, 2000: 214), Smith and Escobedo (2001) or Hamawand (2002: 33, 70, 2003a: 78). However, as reported by Heyvaert (2003: 75-76) and as seems to be implicit in FCG2 (p. 441, 444-445), for Langacker gerundive clauses differ from *-ing* participle clauses in that gerundives offer a holistic view of the complement event.

11. Most of my discussion in this section will focus on Verspoor's (1996) article, which is based on her (1990) dissertation. Her

(2000) paper reworks the ideas expounded in (1996) in terms of the iconic principle that linguistic distance between expressions corresponds to the conceptual distance between them.

12. See footnote 10 above.

13. This percentage is based on data retrieved from the corpus referred to in footnote 14 below. This yielded 671 verbal gerunds, of which 454 (= 67,66%) were dependent on a preposition.

14. The corpus is based on the matching FLOB and FROWN corpora. These are one-million-word samples of written British and American English dating back, respectively, to the years 1991 and 1992 (for details see Mair 2002). For my analysis of clausal complements I used 60,000 words of BrE and 60,000 of AmE, each of these samples consisting of six extracts, each 10,000 words long, representing the following registers: General Fiction, Mistery and Detective Fiction, Humour, Press Reportage and Editorial, Science, and Skills/Trades/Hobbies.

15. Theoretically, *for* NP *to*-infinitives (e.g. "*for Jane to arrive late* surprised him") can also function as pre-verbal subjects, as is often pointed out in the cognitive literature (cf., for instance, Hamawand 2003b: 178-179, Heyvaert 2003: 223). In practice, however, this possibility is very rarely used: *for* NP *to*-infinitives in subject position do not occur in my corpus, while in the *Survey of English Usage* (= 895,000 words) Mair (1990: 22) found only five examples.

16. Extraposition of *-ing* clauses, specially if they lack an overt subject, is possible under restricted circumstances (cf. Huddleston and Pullum 2002: 1407), as is confirmed by my corpus, which contained four extraposed examples, as against 43 *-ing* subjects in pre-verbal position. Moreover, it should be noted that in written English, where the clue of intonation is lacking, it is often not clear whether post-verbal *-ing* subjects are to be interpreted as genuine cases of extraposition or rather as right-dislocated

constituents, with *it* functioning as a referential pronoun referring cataphorically to the event expressed in the *-ing* clause; cf. the following examples, which I counted as cases of extraposition:

(i) 1991 FLOB [Humour] R08 56: She thought of the days when it had taken her five minutes to get dressed to go out. Those simple days when it was a matter of which pair of jeans was clean. [...] It was all very well *turning herself into the latter day answer to Ava Gardner*, but no one had warned her about all the work involved.

(ii) 1992 FROWN [Skills/Trades/Hobbies] E01 133: the event raises money for the Safe-House for Battered Women in Denver. With 4,373 finishers in 1991, the race raised $20,000 for the shelter. "It was a very neat experience *being with all women and seeing the men and staffers and friends on the side cheering*," says Keeler. "And what I really liked was the idea of women helping women."

Right dislocation, as is well known, is found predominantly with noun phrases (Huddleston and Pullum 2002: 1411-1414). If the above sentences were seen as involving right dislocation rather than extraposition, then they would afford further evidence of the strongly nominal character of English gerundives.

[17]. For the sake of simplicity, I will use the familiar label *object clause* or *object complement* to refer to structures such as "I wish *to see Mary*", "I enjoy *watching films*" or "he started *reading the novel*". It should be recalled, though, that as noted by Huddleston and Pullum (2002: 958, 1017ff, 1206ff), the term 'object' is inadequate for many of the clauses functioning as internal complement of the verb.

[18]. Cf. Langacker (FCG1: 59): "Linguistic structures are [...] conceived as falling along a continuous scale of **entrenchment** in cognitive organization. Every use of a structure has a positive impact on its degree of entrenchment, whereas extended periods of disuse have a negative impact. With repeated use, a novel structure becomes progressively entrenched, to the point of becoming a unit; moreover, units are variably entrenched depending on the frequency of their occurrence (*driven*, for example, is more entrenched than *thriven*)".

[19]. They are available in Hofland et al. (1999).

[20]. On the press as an *agile* genre quick to respond to innovations and trends in the language see Hundt and Mair (1999).

[21]. I have excluded from the count the two occurrences of *cease* V*ing* quoted below. In (i) *trading* lacks postmodification and hence, as noted by Palmer (1965: 154) with regard to *I like boxing*, the *-ing* form might be nominal rather than verbal; in (ii) *going* follows a *to*-infinitive, a syntactic context in which *-ing* forms have been strongly preferred over infinitives since at least the seventeenth century (cf. Fanego 1996a: 42).

(i) 1991 FLOB [General Fiction] K10 80: a cabin trunk covered with labels of hotels that had long since *ceased trading*, shipping lines long since defunct, railways long since torn up.

(ii) 1992 FROWN [Romance and Love Story]: P09 207 Even he was forced *to cease going against what I said*.

[22]. The data in this table are adapted from Mair (2002: 112), whose figures for BrE usage are slightly inaccurate (he gives 34:7 for 1961, and 24:24 for 1991).

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