The iconicity of infinitival complementation in Present-day English causatives

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1. Introduction

Present-day English features variation in infinitival complements in English periphrastic causatives, some of them taking a bare, others, a *to*-infinitive:[1]

> (1)   He *had* his secretary *order* some coffee, then closed the door and sat down behind his desk. (BNC ECK 2589)[2]
>
> (2)   The police *got* him *to confess* to the crime. (BNC HXG 799)

Before c1800 these constructions generally occurred with *both* infinitival modes (cf. e.g. Visser 1973: 2256-84 and the relevant entries in the *OED*). Consider the following Middle English examples from the Helsinki Corpus:[3]

> (3)   *Sunnedei aras ure drihten from deðe to liue. and **makede arisen** mid him alle þa þet him efden er ihersumed.* (HM1 IR HOM LAMB14 141)
>   'On Sunday Our Lord arose from death to life. And he made arise with him all those who had obeyed him.'
>
> (4)   *lo þe sweoke hu he walde **makien** hire aleast **to leapen** in to prude.* (HM1 IR RELT ANCR 121)
>   'Lo the traitor, how he wanted to make her at last jump into pride.'

The question arises as to whether the distribution of bare and *to*-infinitives in causatives is random.

Formalists such as Zandvoort (1957: 4), Andersson (1985: 12), Buyssens (1987: 341), Lehrer (1987: 256) and (implicitly) Huddleston (1971: 165) have argued that the two infinitival strategies are merely structural variants, so one would expect their answer to be in the positive. By contrast, the functionalist tenet that formal differences will tend to correspond to functional differences (e.g. Bolinger 1977: x, Haiman 1985: 21-24) would suggest a negative answer. The present study takes this latter perspective. Specifically, I will argue that the Present-day English situation (and its diachronic development) is to an important extent motivated (iconically) by semantics. In addition to the semantic basis I suggest that one must

also take account of grammaticalisation, in particular the compacting effect of (high) token frequency (cf. e.g. Zipf 1935, Bybee and Hopper 2001).[4]

This study focuses on English but it has wider relevance. This is because, first, the semantic motivation invoked is grounded in typological(ly-oriented) work (Dixon 1991, 2000, Fillmore 1972, Givón 1975, 1980, 1990, Talmy 1976, 1988, 2000, Verhagen and Kemmer 1997, Wierzbicka 1975) and second, frequency effects in grammaticalisation are not restricted to English but apply universally.

Section 2 surveys previous scholarship on infinitival complementation in English causatives, starting with primarily synchronic work (Mittwoch 1990, Dixon 1991, Duffley 1992), then moving on to Fischer's work (1992b, 1995, 1996, 1997a, 1997b), which is historical but also has implications for Present-day English. Finally I discuss Givón's (1980) typological study on the binding hierarchy — the starting point of my own account. Very briefly, (semantic) binding refers to the degree to which two clauses are conceptualised as representing a single integrated event. Section 3 extends Givón's binding hierarchy in directions particularly relevant to causatives and explains how it relates to the bare vs marked infinitive distinction in Present-day English. The diachronic dimension is also brought in, very briefly (a more comprehensive discussion is offered in Hollmann 2003: Ch.6). Section 4 wraps up the discussion by determining to what extent the extended binding hierarchy and frequency constitute an improvement on the explanations offered by previous scholarship.

2. Previous scholarship

2.1 *Present-day English: Mittwoch, Dixon, Duffley*

Duffley (1992) is the most comprehensive functionalist account of Present-day English infinitival marking. Not restricting himself to causatives, he also includes other verbs that display variation, e.g. *help* (Duffley 1992: 23-29) and perception verbs (*ibid*.: 29-47). In fact his scope is even larger, also including verbs that feature variation between infinitives and other complementation strategies such as *that*-clauses (e.g. *know*, 1992: 48-56) and uses of the (*to-*)infinitive where it is not dependent on another verb, e.g. when it is used as a subject (*ibid*.: 126-132).

Duffley's study is essentially a monosemy approach to the bare vs *to*-infinitive distinction: he proposes that both strategies are associated with a single basic function, related

to tense. Specifically, the *to*-infinitive is said to evoke the presence of a distinct "before-position" and "after-position" (Duffley 1992: 17 and *passim*), which is absent in the bare infinitive. For complex sentences, the idea is thus that the lower clause *to*-infinitival event is seen as temporally removed from the main clause event, whereas the bare infinitive conveys the idea of coincidence.

For causatives, the presence vs absence of a before vs after frame is described as "antecedent vs concurrent causation" (Duffley 1992: 68), i.e. the causing event is seen as either preceding or occurring simultaneously with the caused event, see the following two examples (from the LOB and Brown corpora):[5]

(5)   … slackness in the Eisenhower Administration had *caused* America *to lag* behind Russia in nuclear development (LOB A01 147 7 [Duffley 1992: 63])

(6)   'What about Ballestre?' I had to shake her to *make* her *listen* (BUC K18 0330 8 [*ibid*.])

In (5) there is "'antecedent' causality, the cause being represented as prior to the effect" (Duffley 1992: 63); in (6), the causing and caused events are conceptualised as occurring simultaneously (*ibid*.: 64).

Now while this might seem an attractive analysis for these examples it cannot be the whole story. Consider the following example from the British National Corpus:

(7)   He *had* his secretary *order* some coffee, then closed the door and sat down behind his desk. (BNC ECK 2589)

Rather than describing two simultaneous events, (7) portrays a situation where the secretary orders the coffee only after her boss makes the request.

As for the other two accounts to be included here, Duffley actually mentions Mittwoch (1990), in connection to a less than helpful suggestion by Dixon (1984) on *have* and *make* (Dixon has more to say in his (1991) grammar of English; see below):

> It has been suggested (Dixon 1984: 586) that the omission of *to* here 'may just be an irregularity with a diachronic explanation — like the plural of *mouse* being *mice* — that has simply to be learnt by users'. As Mittwoch (1990: 125) points out, however, the fact that historically *make* vacillated for a long time between *to* and zero (cf. the biblical *He*

maketh me to lie down in green pastures) calls for a deeper explanation
of why the bare infinitive won out. She speculates that the reason is
purely syntactic, being connected with the fact that *make* (unlike *cause*)
can take a 'small clause', as in *You make me angry*. This, to our mind,
does not explain anything, besides not being distinctive of verbs
followed by bare infinitives (cf. *They got him angry / They got him to
go to the party*). The type of explanation sought here will be based on
the meaning of the causative verb governing the infinitive.

(Duffley 1992: 56-57)

This is a selective representation of Mittwoch's claims. For instance, in suggesting
that *to*-infinitival complements have the "potential for independent temporal specification"
(Mittwoch 1990: 103, see also pp. 118, 125), she has actually anticipated Duffley's account
(though her proposal may be slightly different in that her term "potential" presumably
indicates that while the bare infinitive implies coincidence (for causatives: concurrent
causation), the overtly marked strategy *may, but need not* imply temporal distance (antecedent
causation)).[6]

Dixon's (1991) account of the distribution of infinitival complements in periphrastic
causatives focuses on *cause, make* and *let*.[7] The difference in complementation between *cause*
and *make* is explained in terms of directness. Dixon's analysis of *cause* as indirect follows
standard typological practice (e.g. Wierzbicka 1975). Consider:

(8)   He *caused* Mary *to crash* by almost cutting through the brake cable and then sending
        her down the mountain road. (Dixon 1991: 194)

This is a textbook example of indirect causation in that there is no unity of time, no
unity of space, and some intermediary party — or in this case, state-of-affairs — in between
causer and causee. (The intermediary situation is constituted by the acts described in the *by*-
phrase.) For this reason *cause* "naturally takes *to*" (Dixon 1991: 230). *Make*, by contrast,
"refer[s] to anything the Causer does to bring something about directly" (Dixon 1991: 194, cf.
also p. 230), so it "naturally exclude[s] *to*" (*ibid.*). Concerning *let*, Dixon is less clear. On the
one hand he includes it in his discussion of directness, but on the other, his semantic analysis
does not correspond very well to the standard description of the direct vs indirect distinction
in typology. The reason why, like *make*, it, too, is said to "naturally exclude *to*" (Dixon 1990:

230) is that "[l]et focuses on the main clause subject, and the effect it has on the subject of the complement clause".

I believe that directness indeed plays a role (see section 3, below). However, it alone cannot explain all the facts: *cause* is the only prototypically indirect construction, yet it is not unique in taking the *to*-infinitive. Dixon indeed acknowledges that his account "does not (…) explain why *force* (…) takes *to*" (1991: 230).[8]

2.2 *Diachrony: Fischer*

Fischer's (1992b, 1995, 1996, 1997a and 1997b) studies furnish the most complete treatment of the selection of bare vs *to*-infinitive from a historical perspective. Focusing especially on Middle English, she has argued against the view that the distinction is not functionally motivated (cf. e.g. Kenyon 1909, Ohlander 1941, Quirk and Svartvik 1970, Visser 1973, Warner 1982 and, to some extent, Jack 1991). Fischer (especially post-1992) proposes a set of six semantic-pragmatic factors:[9]

(i)   the activity expressed in the infinitival clause is or is not simultaneous with that of the matrix verb (presence/absence of identity of tense domain) [the former correlating with the bare, the latter, with the *to*-infinitive, WBH]

(ii) the activity expressed in the infinitival clause is or is not directly perceivable [the former being associated with the bare, the latter, with the *to*-infinitive, WBH]

(iii) after causatives, the *to*-infinitive is used when the causation is in some way not direct, either because (a) the subject of the matrix verb (the causer) does not concretely cause what is expressed in the infinitival clause, or (b) because the subject/causer is inanimate and as such more of an instrument than a cause, or (c) what is caused is a process in which the causee himself takes/must take an active part

(iv) in *general* contexts, i.e., when the infinitival clause does not express an actuality, the *to*-infinitive is the rule

(v)   the zero infinitive is the rule in 'irrealis' constructions

(vi) the *to*-infinitive is the rule when the infinitive or the matrix verb is in the passive form (Fischer 1995: 7-8)

It is unnecessary to go into all these factors; suffice it to say that together they do a good job of accounting for the variation observed in her corpus (in Fischer 1995, the complete works of Chaucer and the Paston Letters; expanded in her (1996) study to include the Middle English part of the Helsinki Corpus as well as examples from other texts; see also e.g. the Old English examples from van Kemenade (1993) in Fischer (1997a: 123)). The reason why the rest of the discussion is restricted to only some of them is that not all the distinctions involved correspond to coding distinctions in causatives. That is, only some of these factors are ever expressed, cross-linguistically, by different causative constructions. In particular, factors (iv)-(vi) do not correspond to different causative constructions in English or any other language. (They are included in Fischer's studies because she is concerned with explaining different choices made *in discourse*.) Thus, the meaning distinctions *can* be made across languages, but they are simply not expressed on the causative constructional level. Take factor (iv); Fischer mentions the use of some modal element such as an *if*-clause — I know of no language with a distributional difference among its causatives relative to this variable.

Factors (i)-(iii) are related to (semantic) typologies of causatives. Factor (i), (non-)identity of tense domains, echoes Duffley's (1992) before vs after frame as well as the similar suggestion by Mittwoch (1990). It is also one component of directness as defined by typologists, normally expressed as (presence vs absence of) unity of time (Wierzbicka 1975: 497-99).

As for factor (ii), Fischer suggests that it "concerns in the first place the complements of perception verbs" (1995: 9-10; her examples involve *see*, *hear* or *feel*). It is applicable to causatives as well, though, provided it is reformulated in terms of (presence vs absence of) unity of space/place (Wierzbicka 1975: 494-495, cf. also Fillmore 1972: 4), the second component of directness recognised by typologists.

Fischer's factor (iiia) furnishes the third property of directness. Typologists and typologically oriented semanticists (e.g. Jackendoff 1972: 28, Dixon 2000: 70) distinguish between causative situations where the causer acts directly on the causee and situations where he does so through some intermediary party. Dixon illustrates how in Hindi this variable can have an effect on coding; the causative marker –*a*, in (9), indicates that "the labourers did the work themselves" (2000: 67), while –*va*, in (10), implies that "the contractor achieved the task indirectly (through 'the labourers', who can be included in the clause, marked by instrumental case)" (*ibid*.):

(9)   *Məzduuro   ne   məkan   bənaya*

labourers   ERG   house   was.made.CAUS$_1$

'The labourers built the house' (Dixon 2000: 67)

(10)   *Thekedar*   *ne*   (*məzduuro se*)   *məkan bənvaya*

contractor   ERG   labourers   INST   house   was.made.CAUS$_2$

'The contractor got the house built (by the labourers)' (*ibid*.)

Factor (iiib) is covered by Talmy's (1976, 1988, 2000) four-way classification of causative situations as volitional (animate causer; inanimate causee), inducive (animate causer; animate causee); physical (inanimate causer; inanimate causee) and affective (inanimate causer; animate causee); see also Croft (1991: 167).

Factor (iiic), finally, corresponds to Dixon's notion of control, which he defines in terms of "[w]hether the causee *lacks control* or *has control* of the activity" (2000: 65, emphasis Dixon's). I note that the distinction between absence and presence of causee control is pretty much restricted to situations involving eating and drinking (e.g. *feed* vs *make eat*), posture verbs (alternations such as *sit* vs *set* and *lie* vs *lay*), some manner of motion verbs (*walk*, *drive*, etc.) and the verbs *bathe* (cf. Cole 1983: 121), *bleed* and *burp* (cf. Levin 1993: 32). Extending this notion to causality in general is questionable.

2.3 *Givón*

Taking issue with the logic-based concepts of implicativity and factivity/presupposition, or rather with the traditionally hypothesised correlation between those and mode of complementation, Givón (1980) proposes the more general, not strictly logic-based, but cross-linguistically supported notion of binding. His study is not restricted to causatives but also includes "modality verbs" (*want, succeed, fail, start, finish*, etc.) and "cognition-utterance verbs" (*know, think, say*, etc.) (Givón 1980: 333).

Binding has syntactic and semantic dimensions, correlating as follows: "The higher a verb is on the [semantic] binding scale, the less would its complement tend to be syntactically coded as an independent/main clause" (Givón 1980: 337). Coding as an independent/main clause is analysed into three (cross-linguistically valid) properties:

(i)   The degree to which the agent/subject/topic marking of the embedded-
         clause agent/subject reflects the marking in independent main clauses

(ii)   The degree to which independent-clause tense-aspect-modality marking of the verb is preserved in the embedded clause

(iii)   The presence or degree-of-presence of predicate-raising of the complement verb into the main verb; i.e. the degree to which the complement verb is lexicalized as one word with the main verb

(Givón 1980: 337)

Infinitival complements represent pretty extreme cases of the reduction of T-A-M (Tense-Aspect-Mood) marking (Givón 1980: 337); the bare infinitive being even more reduced (more bound syntactically to the matrix verb) than *to*-infinitives.

The relation between the formal and functional dimensions of binding is iconically motivated. Discussing the use of complementising subordinators Givón writes:

> All other things being equal, the use of a subordinating morpheme which neatly separates the main clause from its complement clause is a coding acknowledgement that the two clauses are semantically still independent of each other, at least to some extent.
>
> (Givón 1980: 371)

Binding phenomena thus instantiate Haiman's principle, that linguistic distance may be employed to mirror conceptual distance (e.g. 1985: 102-147), and binding can be rephrased as the extent to which the matrix and lower clause events are conceptualised as a single, integrated event. The bare infinitive is expected when the degree of integration is relatively high, the *to*-infinitive, when it is lower.

This raises the question as to how to define/measure conceptual closeness. For implicative causatives Givón recognises two factors: intended vs unintended causation and direct vs mediated causation, the first value in each pair representing increased binding and thus favouring the bare infinitive (1980: 336). The first factor echoes, or rather is echoed by, Fischer's suggestion that volitionality plays a role (cf. also Cristofaro 2003: 126, whose semantic analysis of implictive causatives is apparently restricted to this factor); the second anticipates Fischer's identical claim.

These properties lead Givón to suggest that *make* and *have* outrank *cause* on the binding scale because only the former describe intended causation, while *make* outranks *have* because the latter signals mediated causation (1980: 336). Givón's analysis of *have* as a mediated causation predicate goes back to his (1975) study, and is based on examples such as:

8

(11)   I *had* her *lose* her temper by sending John over to taunt her (Givón 1975: 65)

While this made-up example is not ungrammatical, it is marginal not prototypical (see further my FLOB Corpus analysis below). In other words, on the basis of Givón's parameters I would suggest a partial ordering with *have* and *make* outranking *cause*.

Incidentally, Duffley, in discussing Givón's study, agrees that "*make* and *have* (…) involve a closer bond [than *cause*] between the causative event and the event caused" (1992: 57). Duffley's motivation for not accommodating this insight into his own account is that he (mistakenly) sees Givón's parameters as being "based on abstract semantic categories which have been set up a priori in logico-truth-conditional terms" (Duffley 1992: 57).

3. The extended binding hierarchy for implicative causatives

Givón's twin semantic parameters are not enough, consider e.g. *force*, which, like *make* (and *have*) is intended and direct, yet has a *to*-infinitive. In this section I first extend the binding hierarchy (subsection 3.1) and then score the Present-day English causatives *cause, force, get, have, make* and *persuade* (subsection 3.2).

3.1 *Extending the binding hierarchy for implicative causatives*

I propose to expand Givón's (1980) two-dimensional semantic binding hierarchy for implicative causatives to include the following parameters:

1.   Directness:
        a. Unity of time
        b. Unity of space
2.   Presence vs absence of a sphere of control (SC) frame (i.e. of the causer over the causee)
3.   Causation type, specifically: affective, physical<volitional<inducive
4.   Punctuality of the causing event

As regards (1), presence vs absence of an intermediary causal party, one of the dimensions of Givón's (1980) binding scale for implicative causatives, is one component of the typological

9

notion of directness. Unity of time is another. In line with the suggestions by Mittwoch (1990), Duffley (1992) and Fischer (1992b, 1995, 1996, 1997a, 1997b) I suggest that it plays a role in infinitive marking — indeed, in syntactic binding of complements to matrix verbs in general. Two events that occur (more or less) simultaneously are easier to construe as a single event than two events separated by a long interval.

Unity of space is the last component of directness. It often goes hand in hand with unity of time. It is surprising that it has not been mentioned explicitly in the literature on complementation in English causatives. However, it is possible to interpret Fischer's factor (ii) — the possibility vs impossibility for the matrix clause subject to directly perceive the lower clause event — along these lines (cf. also Fischer 1994:95, 104-105). The rationale behind including this property in the extended binding hierarchy is that if the caused event occurs at a spatial remove from the causing event, the two are harder to see as one than if they occur in the same place.[10]

Concerning (2), presence vs absence of a sphere of control frame refers to the question as to whether the causer is inherently superior (physically, socially, or whatever) to the causee. Givón (1980) invokes this notion relative to nonimplicative causatives, arguing that "non-implicative verbs can already be ranked according to *Likelihood of manipulator's authority being challenged by the manipulee*, with 'tell' coding less challenge and 'order', 'ask', 'demand' coding more" (Givón 1980: 368, emphasis Givón's). I extend it to implicatives: a caused event occurring within the causer's SC is easier to think of as forming a single whole with the causing event than a caused event where the causee (potentially) challenges the causer (for more elaborate discussion of this parameter cf. Hollmann 2003: Ch.3 and references cited therein).

As for (3), Verhagen and Kemmer (1997) propose an interesting interpretation of Talmy's causation types as diagrammatically represented by Croft:
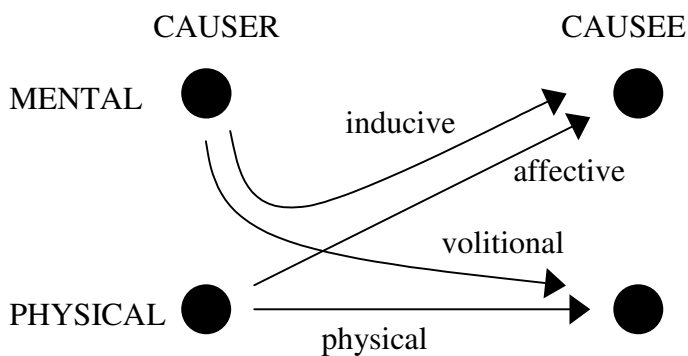
Figure 1: *Talmy's four-way classification of causative events (after Croft 1991: 167)*

The nature of the interaction between causer and causee is interpreted in terms of more vs less direct causation. Directness is used here in a different sense from the typological definition above, but that should not detract from the value of the proposal:

> An obviously important aspect of this model of causation types is the very marked *asymmetry* between entities with a mental dimension (animates) vs. those that are merely physical. Animates can only act on animates via the intervening physical world, i.e. the model implies that one cannot reach into another person's mind and *directly* cause him or her to do, feel, or think something. Physical entities are taken to act directly on other things; hence the straight arrows in the diagram in Fig. 1, vs. the very bent arrow for mental-on-mental causation, and the slightly bent one for mental-on-physical.
>
> (Verhagen and Kemmer 1997: 71)

Verhagen and Kemmer apply this to the Dutch causatives *doen* and *laten*, arguing that the former is associated with the most direct types, physical and affective causation, while the latter usually codes the prototypically indirect type, inducive causation (1997: 72):

(12)   *De stralende zon doet de temperatuur oplopen.* (Verhagen and Kemmer 1997: 62)
       the shining   sun does the temperature   rise
       'The bright sun makes the temperature rise.'

(13)   *De recessie doet de mensen verlangen   naar betere tijden.* (*ibid.*)
       the recession does the people long   to   better   times

'The recession makes people long for better times.'

(14)   *De sergeant liet ons door de modder kruipen.* (*ibid.*)

       the sergeant let us through the mud crawl

       'The sergeant had/made us crawl through the mud.'

Volitional causation is somewhere in between: it is "neither prototypically direct nor prototypically indirect; thus it comes as no surprise that quite a number of examples of both *doen* and *laten* are to be found in this subclass" (Verhagen and Kemmer 1997: 72).

Verhagen and Kemmer proceed to ground their ideas in D'Andrade's (1987) folk theory of the mind, allowing further refinement of their claims, but this need not concern us here. The relevant insight is that Talmy's causation types can be ordered in terms of more vs less direct causer-causee interaction; from there it is a small step to the suggestion that more direct interaction in this sense also facilitates conceptualising the causing and caused events as a single integrated event. Thus, I propose the following causation type binding hierarchy, with the left end being associated with maximal binding:

physical, affective<volitional<inducive

Finally, turning to (4), I hypothesise that there exists a connection between punctuality and binding such that causative situations where the causing event is instantaneous are easier to conceptualise as single events than situations where the causing event is seen as taking a long time. The effect on infinitive marking is illustrated by *get* and *persuade* — whose causing events are accomplishments — as opposed to for instance *make* — whose causing event is an achievement:

(15)   The police *got* him *to confess* to the crime. (BNC HXG 799)

(16)   His lawyer *persuaded* him *to confess* to the crime.

(17)   The police *made* him *confess* to the crime.

For evidence that the causing event is non-punctual in *get/persuade* but not in *make* consider the natural collocation of the former but not the latter with adverbs such as *finally*:

(18)   The police finally *got* him *to confess* to the crime.

(19)   His lawyer finally *persuaded* him *to confess* to the crime.

(20)   ??The police finally *made* him *confess* to the crime.

(20) is only acceptable on an interpretation where the police did not immediately make their suspect confess, for instance because they did some other things first, cf. *The police first searched John's house, then interrogated his colleagues, and in the end made him confess to the crime*.

3.2 *Scoring the causatives*

In this section the causatives *cause, force, have, get, make* and *persuade* are scored for (semantic) binding. The argument is that the scores obtained (help) 'predict' their Present-day English complementation strategy: constructions with the highest binding scores are expected to be the ones taking the bare infinitive; constructions with lower scores, the *to*-infinitive.

The scale for each parameter ranges from 0 (lowest degree of binding) to 1 (highest degree). Most of the properties are binary, i.e. the value is either 0 or 1. The causation type and sphere of control scales, however, have three points. One should note that a rating of .5 is not only assigned to constructions that prototypically portray the situation corresponding to the middle point on such a scale (e.g. for the sphere of control, all constructions except *have* and *force*) but is also given to constructions that are more or less evenly distributed over the higher and lower values of some parameter (this is the case with the causation type semantics of *make* and *force*).

The parameters of the extended binding hierarchy are not all independent of each other. Unity of time, unity of space and direct vs mediated causation are interrelated, which is why typologists subsume them under a single heading, directness. There are also clear interdependencies among intendedness, sphere of control and causation type. The causing event can only be intended if the causer is animate (i.e. inducive/volitional causation). The SC parameter is only relevant in the context of inducive causation, as it is a *social* notion. Furthermore +SC implies intended causation, as commands/instructions by definition reflect the will of the person in command. Since all three properties apply to the relation between causer and causee I call the macro-parameter "relationality".[11]

Directness and relationality could thus be conceived of as lattice structures. The construction based on *cause* is taken to prototypically represent indirect causation, often as measured on all three component properties, while the other causatives stand for direct

13

causation. I will follow standard typological practice in not dividing up directness into its components when analysing the prototypical meanings of constructions.

Relationality is more complicated, with significant distinctions existing between the constructions, so here the components are kept strictly separate. Rather than setting up a lattice, I score the constructions for each subproperty of relationality. The total is then normalised to the same scale of 0-1, i.e. it is divided by 3. In this way the correct scores fall out automatically, avoiding the opacity of a lattice structure.

The results of the 3 macro-parameters are added up, allowing one to compare the sum totals (Table 3, below). One should not expect the bare infinitive to be associated with one specific semantic binding value across the board, the *to*-infinitive, with a particular other value, nor to be able to draw an *a priori* boundary between values associated with either of the two strategies — see Givón's important *relative* notion of the form-function mapping:

> If a point on the semantic hierarchy of binding is coded by a certain syntactic coding device, then a semantically higher point cannot be coded by a syntactically lower point. Rather, it will be coded either by the same coding point, or by a higher coding point on the syntactic coding scale. (Givón 1980: 370)

With respect to the case at hand then, I hypothesise that no causative taking a *to*-infinitive should outrank any bare infinitival causative on the extended semantic binding hierarchy. (More universally: in a given language, a causative associated with a particular complementation pattern should not display a lower degree of semantic binding than a causative representing a syntactically less integrated construction; cf., however, Universal 4, below).

In order to determine the causation type and intendedness scores I carried out a comprehensive analysis of the causatives in the Freiburg-LOB Corpus of British English (FLOB), a one-million word corpus compiled in the 1990s.[12] The examples were not analysed in terms of directness because there is fairly general agreement in the literature that *cause* is the only causative that typically features absence of unity of time and space and presence of an intermediary party in the causal chain (recall that in subsection 2.3 I criticised Givón's proposal that *have*, too, typically signals indirect causation). Including the sphere of control was unnecessary because it is always present in *have*, never in *force*, while the other causatives are analysed as indeterminate.

Pretty much the same kind of categorical statement is appropriate with regard to punctuality. *Get* and *persuade* portray the causing event as an accomplishment, the other constructions, as an achievement (prototypically). Evidence for the accomplishment aspectual semantics of the causing event in *get* and *persuade* comes from the collocation with adverbs indicating non-punctuality such as *finally*, *gradually* and *slowly* (cf. e.g. (17-19), above). Significantly, the 100 million word BNC does not contain any examples of *make* preceded by *gradually* or *slowly* — all the more remarkable given its high frequency. *Cause* and *force* pattern with *make*, although their lower frequencies, especially in the case of *cause*, weaken the argument somewhat. *Finally* does occur, see e.g. (20), below, but is generally to be interpreted as meaning something like 'in the end', (cf. also (20)):

(21)   So what finally *made* you actually *do* something? (BNC CH8 594)

Table 1 presents the results for causation type:[13]

Table 1: *Causation type of periphrastic causatives in the FLOB Corpus*

	cause	force	get	have	make	persuade
phys	7 (32%)	0 (0%)	0 (0%)	0 (0%)	18 (12%)	0 (0%)
aff	12 (55%)	37 (54%)	0 (0%)	0 (0%)	66 (42%)	3 (7%)
vol	1 (5%)	0 (0%)	1 (5%)	0 (0%)	20 (13%)	0 (0%)
ind	2 (9%)	31 (46%)	19 (95%)	8 (100%)	52 (33%)	41 (93%)
total	22 (100%)	68 (100%)	20 (100%)	8 (100%)	156 (100%)	44 (100%)

The number of *cause* tokens is rather low, but the skewing in favour of the physical/affective types yields a score of 1. *Force* is scored .5 owing to its more or less equally strong association with inducive (minimal degree of semantic binding) and affective causation (maximal degree of semantic binding). The data suggest that *get*, *have* and *persuade* prototypically portray inducive causation, so they are scored 1. The total number is very low for *have* but it is virtually impossible to think of examples where causation is not interpersonal. In line with Dixon's statement that *make* is the most neutral causative (1991: 194, 294; 2000: 36-37) its results are truly mixed. A score of .5 reflects this.

As for intendedness, since the potential for an intended vs nonintended distinction only obtains if the causer is a mental entity my analysis is restricted to volitional/inducive

examples. Table 2, below, does not include *cause* since the low frequency of the volitional/inducive types (see Table 1) suggests that the combination with these types is very peripheral indeed.

Table 2: *Intendedness of periphrastic causatives in the FLOB Corpus*

	force	get	have	make	persuade
vol/ind, intended	31 (100%)	20 (100%)	8 (100%)	64 (89%)	41 (100%)
vol/ind, nonintended	0 (0%)	0 (0%)	0 (0%)	8 (11%)	0 (0%)
total no. of vol/ind	31 (100%)	20 (100%)	8 (100%)	72 (100%)	41 (100%)

The evidence suggests that all constructions prototypically convey intended causation, giving scores of 1. Concerning *make* one might object that 11 per cent nonintended causation is not entirely insubstantial, but a proportion of intended causation of almost 90 per cent warrants the claim of prototypicality, especially since the total number of examples (i.e. 72) is far from insignificant.

Table 3 presents the scores of the various causatives for all the parameters of the extended binding hierarchy, and includes the important sum totals.

Table 3: *Periphrastic causatives scored against the extended binding hierarchy for (implicative) causatives*

	directness	punctuality	relationality				sum
			intendedness	SC	caus. type	total /3	total
cause	0	1	0	.5	1	.5	1.5
force	1	1	1	0	.5	.5	2.5
get	1	0	1	.5	0	.5	1.5
have	1	1	1	1	0	.67	2.67
make	1	1	1	.5	.5	.67	2.67
persuade	1	0	1	.5	0	.5	1.5

Given that *have* and *make* outrank the *to*-infinitive taking causatives, the binding hierarchy alone might seem to furnish a neat account of complementation. I believe that

diachrony (frequency considerations) must also be taken into account, but let me first render explicit the three implicational universals underlying the correlations between the macro-parameters directness, punctuality and relationality on the one hand, and complementation, on the other:

Implicational universal 1

If in a language there are differences in complementation strategies in causative constructions then a construction (prototypically) describing direct causation will display a higher degree of syntactic binding than one (prototypically) describing indirect causation (all other things being equal).

Implicational universal 2

If in a language there are differences in complementation strategies in causative constructions then a construction (prototypically) describing punctual causation will display a higher degree of syntactic binding than one (prototypically) describing non-punctual causation (all other things being equal).

Implicational universal 3

If in a language there are differences in complementation strategies in causative constructions then a construction (prototypically) describing situations featuring a high degree of relationality will display a higher degree of syntactic binding than one (prototypically) describing a low degree of relationality (all other things being equal).

The repeated stipulation that all other things be equal in order for the universal in question to work has manifestations on two levels. First, as the extended binding hierarchy is composed of three macro-properties the effect of any of these can be obliterated and even reversed by opposite scores on (one of) the two remaining factors. Second — and this is where diachrony comes in —, given the role of frequency in grammaticalisation, especially in compacting processes, different histories of constructions can also mess up the expected consequences of any and all of these universals. In fact this latter effect can be captured in a fourth universal:

Implicational universal 4

17

> If in a language there are differences in complementation strategies in causative constructions then a construction with a high token frequency will display a higher degree of syntactic binding than one with a low token frequency (all other things being equal).

In Hollmann (2003: Ch.6) I work out the implications of this universal in detail, arguing, for instance, that the very high frequency of periphrastic causative *make* as compared to e.g. *cause* always rendered the former likely to end up with a more, the latter, with a less compact complementation strategy. Moreover, I show how in combination with Fischer's (2000) reconstruction of the 'reversed' grammaticalisation of infinitival *to* universals 1-3 and 4 yield an explanation of the process whereby the once variable strategies came to be regulated by c1800.

4. Concluding remarks

The issue of infinitival strategies in English causatives and in other constructions — not accounted for satisfactorily in the formalist literature — has been discussed in a considerable amount of previous functionally oriented scholarship. In certain important respects the present approach is more conclusive. The cross-linguistic grounding of the present study gives it the edge over previous studies in terms of psychological plausibility. In addition, frequency effects have been taken seriously for the first time in this context, which is a considerable advantage, at least to the extent that one is persuaded by the usage-based model (Bybee 1985, Langacker 1987, Croft 2000).

References

Aikhenvald, A.Y. 2000. Transitivity in Tariana. In *Changing Valency. Case Studies in Transitivity*, R.M.W. Dixon and A.Y. Aikhenvald (eds), 145-172. Cambridge: Cambridge University Press.

Andersson, E. 1985. *On Verb Complementation in Written English* [Lund Studies in English 71]. Malmö: C.W.K. Gleerup.

Aston, G. and Burnard, L. 1998. *The BNC Handbook: Exploring the British National Corpus with SARA*. Edinburgh: Edinburgh University Press.

Berkenfeld, C. 2001. The role of frequency in the realization of English *that*. In *Frequency and the Emergence of Linguistic Structure*, J. Bybee and P.J. Hopper (eds), 281-308. Amsterdam and Philadelphia: John Benjamins.

Bolinger, D. 1977. *Meaning and Form.* London: Longman.

Bush, N. 2001. Frequency effects and word-boundary palatalization in English. In *Frequency and the Emergence of Linguistic Structure*, J. Bybee and P.J. Hopper (eds), 255-280. Amsterdam and Philadelphia: John Benjamins.

Buyssens, E. 1987. The preposition *for* with an infinitive clause. *English Studies* 68: 336-347.

Bybee, J. 1985. *Morphology: A Study into the Relation between Meaning and Form.* Amsterdam: John Benjamins.

Bybee, J. and Scheibman, J. 1999. The effect of usage on degrees of constituency: the reduction of *don't* in English. *Linguistics* 37: 575-596.

Bybee, J. and Hopper, P.J. (eds) 2001. *Frequency and the Emergence of Linguistic Structure*. Amsterdam and Philadelphia: John Benjamins.

Cole, P. 1983. The grammatical role of the causee in universal grammar. *International Journal of American Linguistics* 49: 115-133.

Cristofaro, S. 2003. *Subordination*. Oxford: Oxford University Press.

Croft, W.A. 1991. *Syntactic Categories and Grammatical Relations: The Cognitive Organization of Information*. Chicago: University of Chicago Press.

Croft, W.A. 2000. *Explaining Language Change. An Evolutionary Approach*. Harlow: Longman.

D'Andrade, R.G. 1987. A folk model of the mind. In *Cultural Models in Language and Thought*, D. Holland and N. Quinn (eds), 112-148. Cambridge: Cambridge University Press.

Dixon, R.M.W. 1984. The semantic basis of syntactic properties. *BLS* 10: 583-595.

Dixon, R.M.W. 1991. *A New Approach to English Grammar, on Semantic Principles*. Oxford: Clarendon Press.

Dixon, R.M.W. 2000. A typology of causatives: form, syntax and meaning. In *Changing Valency: Case Studies in Transitivity*, R.M.W. Dixon and A.Y. Aikhenvald (eds), 30-83. Cambridge: Cambridge University Press.

Duffley, Patrick J. 1992. *The English Infinitive.* New York: Longman.

Fidelholtz, J.L. 1975. Word frequency and vowel reduction in English. *CLS* 11: 200-213.

Fillmore, C.J. 1972. Subjects, speakers, and roles. In *Semantics of Natural Language*, D. Davidson and G. Harman (eds), 1-24. Dordrect: D. Reidel.

Fischer, O. 1992. Syntax. In *The Cambridge History of the English Language. Volume II: 1066-1476*, N. Blake (ed.), 207-408. Cambridge: Cambridge University Press.

Fischer, O. 1994. The fortunes of the Latin-type accusative and infinitive construction in Dutch and English compared. In *Language Change and Language Structure*, T. Swan, E. Mørck and O. Jansen Westvik (eds), 91-133. Berlin and New York: Mouton de Gruyter.

Fischer, O. 1995. The distinction between *to* and bare infinitival complements in late Middle English. *Diachronica* 12: 1-30.

Fischer, Olga. 1996. Verbal complementation in early ME: How do the infinitives fit in? In *English Historical Linguistics 1994*, D. Britton (ed.), 247-270. Amsterdam amd Philadelphia: John Benjamins

Fischer, O. 1997a. Infinitive marking in late Middle English: Transitivity and changes in the English system of case. In *Studies in Middle English Linguistics*, J. Fisiak (ed.), 109-134. Berlin and New York: Mouton de Gruyter.

Fischer, O. 1997b. The grammaticalisation of infinitival *to* in English compared with German and Dutch. In *Language History and Linguistic Modelling, A Festschrift for Jacek Fisiak on his 60th Birthday*, R. Hickey and S. Puppel (eds), 265-280. Berlin: Mouton de Gruyter.

Fischer, O. 2000. Grammaticalisation: unidirectional, non-reversable? The case of *to* before the infinitive in English. In *Pathways of Change: Grammaticalization in English*, O. Fischer, A. Rosenbach and D. Stein (eds), 149-169. Amsterdam and Philadelphia: John Benjamins.

Givón, T. 1975. Cause and control: on the semantics of interpersonal manipulation. In *Syntax and Semantics 4*, J.P. Kimball (ed.), 59-90. New York: Academic Press.

Givón, T. 1980. The binding hierarchy and the typology of complements. *Studies in Language* 4: 333-377.

Givón, T. 1990. *Syntax. A Functional-Typological Introduction. Volume II*. Amsterdam and Philadephia: John Benjamins.

Haiman, J. 1985. *Natural Syntax: Iconicity and Erosion*. Cambridge: Cambridge University Press.

Hollmann, W.B. 2003. *Synchrony and Diachrony of English Periphrastic Causatives: A Cognitive Perspective*. Ph.D. dissertation. Manchester: University of Manchester.

Hooper, J.B. 1976. Word frequency in lexical diffusion and the source of morphophonological change. In *Current Progress in Historical Linguistics*, W. Christie (ed.), 96-105. Amsterdam: North Holland.

Huddleston, R.D. 1971. *The Sentence in Written English: A Syntactic Study Based on an Analysis of Scientific Texts*. London: Cambridge University Press.

Jack, G. 1991. The infinitive in early Middle English prose. *Neuphilologische Mitteilungen* 92: 311-341.

Jurafsky, D., Bell, A., Gregory, M. and Raymond, W.D. 2001. Probabilistic relations between words: Evidence from reduction in lexical production. In *Frequency and the Emergence of Linguistic Structure*, J. Bybee and P.J. Hopper (eds), 229-254. Amsterdam and Philadelphia: John Benjamins.

Kenyon, J.S. 1909. *The Syntax of the Infinitive in Chaucer*. London: Chaucer Society.

Krug, M.G. 2001. Frequency, iconicity, categorization: evidence from emerging modals. In *Frequency and the Emergence of Linguistic Structure*, J. Bybee and P.J. Hopper (eds), 309-336. Amsterdam and Philadelphia: John Benjamins.

Kytö, M. 1991. *Manual to the Diachronic Part of the Helsinki Corpus of English Texts: Coding Conventions and Lists of Source Texts*. Helsinki: Department of English, University of Helsinki.

Langacker, R.W. 1987. *Foundations of Cognitive Grammar. Vol. 1: Theoretical Prerequisites*. Stanford: Stanford University Press.

Lehrer, A. 1987. Why *to* is not a verb. In *Aspects of Language: Studies in Honour of Mario Alinei. Vol. 2. Theoretical and Applied Semantics*, N. Århammar et al. (eds), 249-260. Amsterdam: Rodopi.

Levin, B. 1993. *English Verb Classes and Alternations*. Chicago: University of Chicago Press.

Mittwoch, A. 1990. On the distribution of bare infinitive complements in English. *Journal of Linguistics* 26: 103-131.

Moonwoman, B. 1992. The mechanism of lexical diffusion. Paper presented at the Annual Meeting of the Linguistic Society of America, Philadelphia.

Ohlander, U. 1941. A study on the use of the infinitive sign in Middle English. *Studia Neophilologica* 14: 58-66.

Phillips, B. 1980. Old English *an ~ on*: a new appraisal. *Journal of English Linguistics* 14: 20-23.

Phillips, B. 2001. Lexical diffusion, lexical frequency, and lexical analysis. In *Frequency and the Emergence of Linguistic Structure*, J. Bybee and P.J. Hopper (eds), 123-136. Amsterdam and Philadelphia: John Benjamins.

Quirk, R. and Svartvik, J. 1970. Types and uses of non-finite clause in Chaucer. *English Studies* 51: 393-411.

Talmy, L. 1976. Semantic causative types. In *Syntax and Semantics. Volume 6. The Grammar of Causative Constructions*, M. Shibatani (ed.), 43-116. London: Academic Press.

Talmy, L. 1988. Force dynamics in language and cognition. *Cognitive Science* 12: 49-100.

Talmy, L. 2000. *Toward a Cognitive Semantics. Volume I: Concept Structuring Systems*. Cambridge, Mass. and London: MIT Press.

van Kemenade, A. 1993. The history of English modals: a reanalysis. *Folia Linguistica Historica* 13: 143-166.

Verhagen, A. and Kemmer, S. 1997. Interaction and causation: causative constructions in modern standard Dutch. *Journal of Pragmatics* 27: 61-82.

Visser, F.T. 1973. *An Historical Syntax of the English Language. Part Three, Second Half. Syntactical Units with two and with More Verbs*. Leiden: E.J. Brill.

Warner, A.R. 1982. *Complementation in Middle English and the Methodology of Historical Syntax. A Study of the Wyclifite Sermons*. London: Croom Helm.

Wierzbicka, A. 1975. Why "kill" does not mean "cause to die": The semantics of action sentences. *Foundations of Language* 13: 491-528.

Zandvoort, R.W. 1957. *A handbook of English Grammar*. London: Longmans.

Zipf, G. 1935. *The Psycho-Biology of Language*. Boston: Houghton Mifflin.

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[1] This paper is a condensed version of part of Chapter 6 from Hollmann (2003). I am grateful to Bill Croft, David Denison and Olga Fischer for their comments on the full version.
[2] For more information on the British National Corpus see e.g. Aston and Burnard (1998).
[3] Cf. Kytö (1991) for more infornation on the Helsinki Corpus.

4 Papers in that volume specifically dealing with the notion that frequency leads to erosion are the ones by
Berkenfeld, Bush, Fenk-Oczlon, Jurafsky et al., Krug and Phillips. Earlier studies include Fidelhotlz (1975),
Hooper (1976), Phillips (1980), Moonwoman (1992) and Bybee and Scheibman (1999).
5 The Brown Corpus is a one-million word corpus of written American English that was compiled in the 1960s.
The Lancaster Oslo/Bergen corpus is similar in size. Compiled in the 1970s it was intended as the British
English equivalent to the Brown Corpus. For more information see e.g. the on-line manuals:
http://khnt.hit.uib.no/icame/manuals/brown/INDEX.HTM and
http://khnt.hit.uib.no/icame/manuals/lob/INDEX.HTM [15 December 2003].
6 Mittwoch proposes two more semantic-pragmatic factors, involving the "veridicality" of the infinitival event
and the possibility to negate the infinitival clause (1990: 103 and *passim*), while also bringing in diachrony
(*ibid*.:125). For present purposes it is unnecessary to go into these factors, but cf. Hollmann (2003: Ch.6).
7 Mindful of Talmy's suggestion that "the general causative category", i.e. *cause, make*, etc. is rather different,
force-dynamically, from permission/enablement predicates such as *let* and *allow* (2000: 413, 419) I concentrate
on the former.
8 Dixon suggests that the bare infinitive in *have* is another problem, as that construction "may involve some
indirect means" (1991: 230) but this issue evaporates if one takes a prototype-based approach: the fact that it
may describe indirect causation does not mean that it should do so prototypically, and indeed it does not (see
further below and also Hollmann 2003: Ch.3).
9 I ignore here the evolution Fischer's ideas underwent; cf. Hollmann (2003: Ch.6) for a detailed reconstruction.
10 Givón's (1990) update of his binding hierarchy proposal supports the inclusion of the other dimensions of
directness (see p.526). Cristofaro (2003) disagrees that unity of time/space promote conceptualisation as a single
integrated event; for a critique of her arguments see Hollmann (2003: Ch.6).
11 Relationality is not an ideal umbrella term since directness also involves the bond between causer and causee.
However, finding a more appropriate label is hard.
12 For more information cf. the online manual at the ICAME www page:
http://khnt.hit.uib.no/icame/manuals/flob/INDEX.HTM [15 December 2003].
13 Following standard practice in scholarship on causatives (e.g. Verhagen and Kemmer 1997: 64) I analyse
human institutional entities such as companies and governments as human, i.e. mental, entities.