Passivisability of English periphrastic causatives

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Abstract

Causatives in English and other languages display differences in passivisability. In line with e.g. Rice (1987) it is argued that this variation is due to different degrees of semantic transitivity. Transitivity is defined in terms of Hopper and Thompson's (1980) parameters, modified in the light of typological research on causatives. The British National Corpus was used to obtain examples of both active and passive periphrastic causative *make*, semantically the most general causative. A comparison between these two data sets yields quantitative evidence for a number of correlations between transitivity properties and passivisability. Because of the generality of *make* the results may be extended to other causatives. And due to the grounding in typological work the correlations can be stated as implicational universals. These universals explain many of the facts of differential passivisability but some additional hypotheses are made to account for more. A few questions remain, but these may evaporate if we allow for the possibility that some semantic factors are more important than others.

Keywords: causatives; passive; transitivity; typology.

1. Introduction

This paper sets out to account for the differences in passivisability of English periphrastic causatives – i.e. causative constructions with infinitival complements – such as *cause, force, get, have, make, persuade*.[1] Compare for instance *make*, which passivises readily, to *have*, which does not:

(1)   *Recruits* […] *were made to hop on the spot.* (BNC CJR 460)

(2)   **Recruits were had to hop on the spot.*

The inherently causative predicates *force* also passivises easily, which, interestingly, is also true in languages where more general causatives are more resistant to passivisation:

German (cf. Nedjalkov 1971: 27):[2]

(3)   *Der Student wurde gezwungen abzureisen.*
       'The student was forced to leave.'

(4)   **Der Student wurde abzureisen gelassen.*
       the student was leave let

Dutch:

(5)   *De student werd gedwongen (om) te vertrekken.*
       the student became forced (for) to leave
       'The student was forced to leave.'

(6)   **De student werd laten/doen vertrekken.*[3]
       the student became let/do to leave

Spanish:[4]

(7)   *El estudiante fue obligado a salir.*
       'The student was forced to leave.'

(8)   **El estudiante fue hecho (/dejado) a salir.*
       the student was made (/let) to go

Get is somewhere in between, accepting passive only marginally (informal inquiries among American English speakers suggest increased acceptability if *got* is replaced with *gotten*):

(9)   ??*Recruits were got to hop on the spot.*

(10)   *The agreeableness of a thing depends […] on the number of people who can be got to like it.* (*OED*, likeableness)

English *persuade* patterns with *make* and *force*, accepting passivisation easily: *cause* also accepts passivisation, though not as readily as *force, make* and *persuade*.[5]

(11) *Essentially, people in their work roles are caused to respond from their unconscious world of internal objects.* (BNC CBH 599)

(12) *It was not until early in 1984 that Branson was finally persuaded to stop living on the houseboat, by his doctor, after he had contracted a severe case of pneumonia.* (BNC FNX 1408)

The evidence for these differences in passivisability comes not only from casual observation and informal native speaker judgments, but also from corpora.[6] Gilquin (2004) used the British National Corpus[7] to shed light on the frequency of passivisation of *cause*, *get*, *have* and *make*. Basing herself on a 9.8 million words subcorpus of spoken and written texts (cf. Gilquin 2004: 186–191) she finds that *make* passivises in more than 8 per cent of cases (Gilquin 2004: 256), while for *cause* the ratio is significantly lower, at .5 per cent (Gilquin 2004: 257). Due to the design of Gilquin's search algorithm she does not report on the frequency of passive *get* and *have* in her subcorpus (2004: 257), but having also carried out a less automated search of the whole BNC for these verbs she does not provide any unambiguous examples of passive *have* and *get* either. (She seems to analyse *The argument is not that the check is fallible, for if it were we might still hope that enough memories could be **got to** prop each other up, as Ayer suggests (Ayer, 1954).* [BNC F9K 1333] as an unambiguous example [Gilquin 2004: 257] but the problem here is that memories are not normally thought of as being consciously manipulable in this fashion, and so an interpretation on which *got* means something like 'obtain' and the *to*-infinitive clause is an adjunct would be more plausible.) An analysis of the FLOB corpus[8] (one million words, British English) yields similar results. There are 8 tokens of passive *make* out of a total of 156, i.e. 5.1 per cent. There are no passive tokens of the less passivisable constructions *cause* and *get* – not very surprising given that the total numbers are only 22 and 20, respectively – and, as expected, none of *have* either. The FLOB data also confirm the ease of passivisation of *force* and *persuade* (not included in Gilquin's study): 30 out of 68 *force* tokens (44.1 per cent) can be classified as passive; for *persuade* the frequency is 11 out of 44 (25.0 per cent). Whilst these percentages are so high that one may be tempted to argue for a higher degree of passisivability than in the case of *make*, the problem is that for these two constructions the passive constructions shades into the copula construction. Consider, for instance, that in an example like *Few of them […] will ever be persuaded to accept at face value Mr. Saddam's periodic offers of am-*

nesty to Kurdish refugees (FLOB A04 178) we could insert an intensifier such as *fully, entirely* or *completely* as a modifier of *persuaded*, suggesting that the participle may function here as an adjective. Note also that by replacing *be* with *feel* the meaning of the sentence changes only very little. A similar argument can be made in relation to some cases involving *force*: e.g. *But Dickon was no match for the team of four galloping greys and disconsolately, she was forced to give up the chase* (FLOB P28 67) could be rephrased as *But Dickon* […] *found herself forced* […] The prudent solution to this classification problem taken here is to equate *force, make* and *persuade* in terms of passivisability.

Despite the considerable amount of attention causatives have received in the literature crossconstructional variation in passivisability has not been extensively studied at all. The only previous in-depth study I am aware of apart from Gilquin (2004) is Stefanowitsch (2001: 196–209). Focusing on *force, get, have* and *make* he argues that passivisability depends on the compatibility between the semantics-pragmatics of the passive construction, and of the relevant causative construction. The function of the passive is to increase the salience of the O argument (the causee) at the expense of A (the causer).[9] The details of Stefanowitsch's semantic analysis would take us too far afield but briefly, *make* and *force* are analysed as construing the causative event such that the causee not the causer is in focus. This meaning dovetails nicely with that of the passive (Stefanowitsch 2001: 202–204). *Have,* by contrast, features a relatively salient causer and so is naturally less congruous for passivisation (Stefanowitsch 2001: 204–205).

Using careful corpus-based semantic analysis, Stefanowitsch provides an attractive account of the passivisation facts of *make, force* and *have*. However, he abstracts away from the marginal passivisability of *get* (2001: 205; cf. examples [9–10], above). Analysing its meaning as parallel to that of *have* he sees the causer as more in focus than the causee. Admittedly, Stefanowitsch seems to suggest that in *get* the causee may be more salient than in *have*: he argues that in the former it "is affected in a sense: it is convinced or tricked into doing something it would not have done otherwise, i.e. there is a change of opinion with respect to the willingness to perform the result" (2001: 205). If the causee is therefore less backgrounded in *get* than in *have*, the facts of (marginal) passivisation are less surprising. However, Stefanowitsch also implies that the causer is more salient in *get* than in *have*, since in the former but not the latter he sees it as "very agentive, having to act on the causee for a prolonged period of time" (2001: 205). Stefanowitsch's prediction regarding the effect of the non-punctuality of

the causing event on passivisability is contradicted by Hopper and Thompson (1980), as I explain below. For now, the problem is that if *both* causer and causee should be more salient in *get* than in *have* it does not follow that the overall balance of focus in *get* is less skewed towards the causer. In other words, Stefanowitsch's account does not easily accommodate passive *get*.

Stefanowitsch would also have to account for the ease of passivisation of *cause*. One of his arguments for excluding *cause* is that compared to *force, get, have* and *make* it is "much more abstract" (2001: 161).[10] To the extent that this is true – with Dixon (1991, 2000), I argue in §2, below, that it is not –, Stefanowitsch (2001) does not explicitly describe how the (relative) ease of passivisation of *cause* falls out of its semantics: how does abstractness relate to relative salience of causer and causee? Stefanowitsch (personal communication) suggests that the passivisability of *cause* can actually be explained by recognising some aspects of the semantics of the construction, notably the lack of benefit on the part of the causer and the negative semantic prosody with intransitive lower clauses (cf. Stubbs 1995: 43 for a similar suggestion concerning non-infinitival complements of *cause*), implying a highly affected causee. It follows that the causer is relatively non-salient, and the causee, salient.

Persuade is also ignored in Stefanowitsch's discussion on passivisation. Elsewhere in his study he notes that it is more specific in meaning than e.g. *make*, in that it "typically, but not necessarily, suggest[s] some type of verbal interaction between the causer and the causee" (2001: 40). Drawing on Rice (1987) I argue below that this specificity contributes significantly to its ease of passivisation. Note, though, that this semantic dimension cannot be captured in terms of relative salience of causer/causee in any obvious way.

The account presented below is similar in spirit to Stefanowitsch's study in that it, too, traces the differential passivisability of the various causatives to differences in meaning. In view of the connection between passivisability and (semantic/conceptual) transitivity (see e.g. Bolinger 1978; Hopper and Thompson 1980; Keenan 1985; Rice 1987)[11] the starting point of the present account is Hopper and Thompson's (1980) empirically well-supported parameters of transitivity. This allows the conclusions about the relation between functional properties of the constructions and passivisability to be stated as implicational universals. Herein lies the main contrast with Stefanowitsch's study: given the explicit grounding in typological research the conclusions can be more straightforwardly extended to other languages.

2. Methodology

At first blush the most obvious approach to studying the correlation between the semantics (transitivity) and passivisability of periphrastic causatives might seem to be simply to analyse their meaning and see which properties appear to be responsible for the differences in passivisability. An important problem emerges, however: for some causatives it is hard to pin down their semantics to anything very specific; *make* is the clearest example. Inoue suggests that its semantics only consist of the component [+cause], i.e. it merely represents the fact of causation (1992: 132). Similarly, Dixon, recognising that scholars commonly assume that *cause* is the most neutral causative, argues that because of the association of *cause* with indirect causation (for the notion of directness cf. §2.2.3., below) *make* is actually the least specific (Dixon 1991: 194, 294, 2000: 36–37; using data from the FLOB corpus Hollmann [2003] has found some evidence to support the notion that *make* is compatible with most types of causation, see e.g. p.156).

I set out to turn this generality of *make* into a virtue. By carefully analysing and comparing instances of active versus passive *make* in terms of a substantially revised version of Hopper and Thompson's transitivity parameters I will demonstrate what semantic properties go hand in hand especially naturally with passive coding. The basic procedure here is to score every active and passive example for each of the transitivity parameters; more about this in §2.3. Properties of transitivity that feature significantly more frequently in passive than active *make* should correspond to properties that are typically present in other causatives that passivise readily as well, both in English and – because of the crosslinguistic validity of the parameters involved – in other languages. Conversely, parameter values that are not significantly more frequent in passive *make* than in the active are not expected to be relevant to a given construction's degree of passivisability. The underlying suggestion here is that passive being associated with increased semantic transitivity, passive *make* will tend to be used for situations which are conceptually highly transitive. These situations will have certain characteristics. And depending on their semantics, I contend, other causatives will be more or less compatible with those characteristics.

Thus, based on the parameters that are found to yield statistically significant differences in active vs. passive *make* I will come up with some hierarchies – and corresponding universals – of transitivity/passivisability of causatives. The possibility of using (testing) these universals in (against)

other languages is of course subject to the language in question having a reasonably clear active/passive distinction.

Testing the hypotheses against crosslinguistic data would be highly desirable. Careful intralinguistic analysis is a useful basis for discovering crosslinguistic universals (Croft 2001: 107) but one expects that in the light of crosslinguistic data a certain amount of fine-tuning may be required: if one focuses on a single language one may easily miss distinctions, i.e. if the different values are coded in the same way in the language under investigation.

It is worth underlining that the universals will be of the implicational type. That is, I will *not* argue that certain types of causative verbs will *always* allow passivisation and others *never*. Instead, the generalisations will be of the form: if causative construction X passivises, then any other construction that is higher on the scales of transitivity will also passive, but not necessarily ones that are lower on the hierarchies.

In addition, the scope of passive varies for each language, and so the cut-off points (or regions, consider English *get*) between causatives that do and those that do not passivise will not be constant crosslinguistically: languages that allow passivisation of relatively intransitive predicates in general will also be expected to allow passivisation of causatives that are low on transitivity; conversely, languages that allow passivisation of only highly transitive predicates will only have a passive for accordingly highly transitive causatives.

The remainder of this section, §§2.1.–2.3., describes three methodological issues in some detail. First, I show how I went about finding a corpus large enough to get a solid number of examples of causative *make*. The second aspect of my methodology concerns Hopper and Thompson's (1980) transitivity parameters: since their account is designed to accommodate clauses in general it must be rendered more suitable for causatives. The third methodological dimension described below is the scoring system.

2.1. The corpus

In my quest for a sufficiently large corpus to get several hundreds of examples of active and passive causative *make*, the British National Corpus (BNC) was a natural choice. I searched it by means of the University of Zürich interface.[12] For reasons to do with size and clarity (see Hollmann 2003: 180–181), I used the 90 million word written part.

Passive periphrastic causative *make* is not very common so I collected examples from the entire written part. My search string was *BE made to*[13] (where the capitals indicate that I looked for all forms of *be*). For the active, I searched for *make* in all its morphological guises. Since the verb *make* is very frequent indeed, this time I restricted my search to one of the subcorpus options, i.e. "beginning sample".[14] The subcorpus in question runs to some 21 million words, which allowed me to find sufficiently high numbers of examples.

I restricted myself to the simple present and the simple past, taking 100 examples of each of these tense-aspect constructions for the active and for the passive, yielding a data base of 400 examples in total. The reason why I chose the simple present and past is that these are the only TA constructions that occur 100 times (in fact, more often than that; the first 100 unambiguously causative[15] examples were selected). I excluded examples where *make* was preceded by a modal verb:

(13)   *For that violation they can and should be made to pay.*
        (BNC ACS 1047)

The reason for excluding these was the resulting changes in transitivity caused by the modals.[16] The decreased transitivity of example (13) is purely due to the modal auxiliary; it is not related to the semantics of the periphrastic causative construction itself – which is what the present study sets out to explore.

2.2.   The semantic parameters: Modifying Hopper and Thompson (1980)

Hopper and Thompson's (1980) parameters form the starting point of this investigation, but I modify them substantially. This is necessary because Hopper and Thompson's account was designed for clauses in general. As a result, first, not all their parameters are relevant to causatives. Second, some parameters must be more precisely/clearly defined to make them more suitable for causatives. Third, Hopper and Thompson's account misses out on a few semantic distinctions that contribute to differences in transitivity in causatives.

Table 1 below presents Hopper and Thompson's parameters with their high and low transitivity values:

Table 1.   Hopper and Thompson's parameters of transitivity (1980: 252)

Parameter	High transitivity	Low transitivity
participants	2 or more participants	1 participant
kinesis	action	non-action
aspect	telic	atelic
punctuality	punctual	non-punctual
volitionality	volitional	non-volitional
affirmation	affirmative	negative
mode	realis	irrealis
agency	A high in potency	A low in potency
affectedness of O	O totally affected	O not affected
individuation of O	O highly individuated	O non-individuated

There are certain interrelations between properties. These interconnections determine the structure of the discussion in the rest of §2 and §3. The parameter groupings are as follows:

1.   causality (volitionality, agency, affectedness and participants)

2.   aspect (kinesis, aspect and punctuality)

3.   modality (affirmation and mode)

4.   individuation of O (consists of various subparameters, cf. Hopper and Thompson 1980: 253)

I discuss causality in §2.2.1., below. To see that kinesis, aspect and punctuality hang together one should for instance consider that a non-action such as liking beer is always atelic and nonpunctual, and that a punctual event (achievement) such as knocking someone down is inherently telic. Affirmation and mode are connected in that negative sentences are always irrealis. Modality plays no further role in my account. This is because it is not a property of the causative construction itself but a function of higher level constructions in which the causative may be embedded, such as the Negative construction. In other words, to the best of my knowledge there is no language where affirmative vs. negative and realis vs. irrealis corresponds to coding distinctions in causatives. The same applies to individuation of O, which is therefore also omitted from the rest of the discussion.

§§2.2.1.–2.2.2. below describe causality and aspect in more detail; §2.2.3.–2.2.5. discuss three further dimensions of transitivity in causatives: directness, sphere of control and specificity. As regards the actual scoring of the corpus examples, only causality, aspect and directness are used. The values for sphere of control and specificity are constant across the data, i.e. *make* is invariably neutral with respect to the sphere of control frame and always relatively unspecific. As a result, while these parameters are felt to be significant, the implicational universals hypothesised below capturing the relation between sphere of control/specificity on the one hand, and passivisability, on the other, are not supported by corpus data.

2.2.1. Causality

One of the properties of causality is affectedness of O. Hopper and Thompson are less than fully transparent about this parameter. They describe it as "how completely that patient is affected" (1980: 253) and illustrate this by pointing out that the patient is affected "more effectively in, say, *I drank up the milk* than in *I drank some of the milk*" (Hopper and Thompson 1980: 253). Example (14), below, also features "complete" affectedness (confusingly also called "total"), while (15) does not:

(14)   *Jerry knocked Sam down*. (Hopper and Thompson 1980: 253)

(15)   *Jerry likes beer*. (Hopper and Thompson 1980: 253)

In the typological literature affectedness is sometimes analysed as a complex property, consisting of 2 dimensions. The first has to do with the object itself and concerns the distinction between the causee being affected in his/her/its entirety by the caused event or only in part. Referring to Aikhenvald (2000: 158) Dixon states that Tariana makes a morphological distinction between full and partial affectedness: the objects in sentences corresponding to English *You made my house fall down completely* and *They made some woodchips fall* (2000: 67) are marked differently. The idea here is that the woodchips are conceptualised against the larger domain of the entire house. Dixon's first example also illustrates the highly transitive value on the second subparameter, which involves not so much the participant acted on but the change-of-state event it is subjected to, specifically, whether that event is completed. The house falling down completely is

conceptualised as the natural endpoint of the process in question. By contrast, scratching the surface of the house counts as incomplete affectedness, as one can always do some more scratching. The same goes for making a few woodchips fall.

Causative situations such as the event described by *mow the lawn* show that the twin dimensions of affectedness are very often two sides of the same coin. Indeed, Dowty has proposed an insightful unidimensional account of affectedness, in terms of the so-called "incremental theme" (1991: 567–571 and *passim*; see also Hay, Kennedy, and Levin 1999; Croft in prep.), which I will follow. The central idea is that the extent to which the lawn has been affected by the mowing (i.e. the area that has been mowed) parallels the extent to which the activity of mowing the lawn is complete. Put differently, the affecting event and the affected object are "homomorphic" (Dowty 1991: 567). The incremental theme, labelled "verbal scale" by Croft (in prep.), represents the extent to which the O argument, or more accurately some property of O, has been affected in the event. The property in question depends on the lexical semantics of the predicate. Thus, in the case mowing the lawn it is the degree to which the lawn is mowed; in the case of making someone/something engage in/undergo some event, the extent to which one succeeds in this.

The causatives presently studied are incompatible with zero success; for these situations so-called non-implicative causatives, such as *ask*, *order* or *tell* may be used:

(16)   *The sergeant made the recruits hop on the spot, but they didn't do it.*

(17)   *The sergeant ordered the recruits to hop on the spot, but they didn't do it.*

Alternatively, of course, the implicative causative may complement a verb such as *try* or *want* (*The sergeant tried/wanted to make the recruits hop on the spot, but they didn't do it*) but then it is the matrix verb not the causative that codes the lack of success.[17]

Thus, the possibilities for the incremental theme/verbal scale in terms of transitivity are twofold. Full affectedness is maximally transitive:

(18)   *Having Goldberg in the room with it, as he has been in my life since that first day at college, made me grasp clearly, for the first time, just what it is I have been after, he wrote.* (BNC A08 2766)

Cases where the degree of success is somehow not full are minimally transitive:

(19)   *He is the only pianist I have ever heard who does not make Balakirev's Islamey sound clumsy in places.* (BNC BMC 2438)

(20)   *During interrogation some detainees were made to kneel for long periods, in some cases on bottle tops and pebbles.* (BNC CFH 95)

In (19) the event of making the piece sound clumsy in places is viewed against the background of making it sound clumsy in its entirety. In interpreting (20) some detainees are seen to be affected, while others are not. Labelling a lack of full affectedness "partial" affectedness, we get the hierarchy below, where the left-hand side is associated with maximal transitivity, the right hand side, with minimal transitivity:

full < partial

Moving on to the properties volitionality and agency, let me first note that they are interrelated in that volitionality implies high potency. Hopper and Thompson define agency and volitionality only relative to A, but in causatives O also potentially displays these characteristics, i.e. if human or at least animate. More generally, Os – especially if human/animate – have the potential to put up *resistance* (cf. Talmy 2000: 416, 458; see Hollmann [2003: Ch.2] for some discussion). Overcoming that amounts to increased transitivity. A related consideration here is the increased salience of mental participants as compared to inanimates (cf. Hopper and Thompson 1980: 253). This implies that causation where the causer and causee are mental entities is more transitive than causation where both are things (all other things being equal).[18] Talmy (1976, 1985, 1988; cf. also Croft 1991) has proposed a four-way classification of causation types based on the animate vs. inanimate distinction in causers and causes:
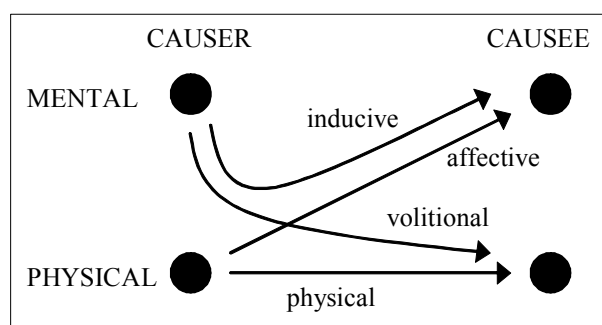
Figure 1. Talmy's typology of causation types (after Croft 1991: 167)

In terms of this classification, a partial ordering presents itself with respect to transitivity. Physical causation is the least transitive, as both A and O are inanimate. The inducive type, conversely, is the most highly transitive, featuring as it does an animate causer and causee. Volitional and affective causation are somewhere in between, both of them having one mental and one inanimate participant. In order to distinguish between these types, I tentatively suggest that due to the inherent salience associated with the matrix clause subject position as compared to the lower clause subject, an animate causer is more salient than an animate causee (again, all other things being equal). This yields the following hierarchy:

inducive < volitional < affective < physical

Hopper and Thompson's participants and affectedness of O parameters, finally, are also connected: consider that a unary participant clause implies that the patient is not affected (since there is none). One might perhaps question the usefulness of the participants parameter in the context of causatives, as the presence of a causer and a causee might seem to imply the presence of two participants. This is not strictly speaking true, however:

(21)   *If people try to apply a "turning off the tap" strategy when they are hopping up and down in scalding water they may merely make themselves feel worse.* (BNC CKS 1425)

In (21) the causer and causee are identical. Talmy's concept of the "divided self" is useful here. He uses it to explain the force dynamics of a situation such as the one portrayed by *He thinks he should go* (2000: 451): human

beings can apparently conceive of the psyche as internally divided, the different parts being in force-dynamic conflict. Prototypical unary causal chains are a logical impossibility, but (21) demonstrates that cases of the divided self do exist. They are analysed as being lower in transitivity than binary chains:

$$\text{binary} < \text{divided self}^{19}$$

2.2.2. Aspect

Here the scales remain unchanged:

$$\text{action} < \text{non-action}$$
$$\text{telic} < \text{atelic}$$
$$\text{punctual} < \text{non-punctual}$$

2.2.3. Directness

In typological(ly oriented) studies on causatives there has been a lot of debate on "directness" (e.g. Fodor 1970; Fillmore 1972; Jackendoff 1972; Wierzbicka 1975; Givón 2001; Cristofaro 2003). Duffley (1992), Fischer (1995) and Stefanowitsch (2001) have also discussed this, though only with regard to English.

Synthesising the literature, I analyse directness as consisting of three parameters. The first is unity of time. This concerns the temporal relation between the causing and caused events, i.e. whether they occur (or are conceptualised as occurring) hand-in-hand, or with a discontinuity between them (see e.g. Fodor 1970: 432–423; Wierzbicka 1975: 497–499). Presence of unity of time is analysed as more highly transitive than a delayed caused event:

$$\text{presence of unity of time} < \text{absence of unity of time}$$

The overwhelming majority of my examples feature cotemporality of causing and caused events, but some do not. In the literature absence of unity of time is usually exemplified with made-up sentences containing temporal adverbials (cf. Fodor's example *Floyd caused the glass to melt on Sunday*

by heating it on Saturday) but many corpus examples are less clear-cut. One is often forced to rely on careful consideration of the context:

(22)   *Walker also found that none of the 11 pronouns resolved correctly by the original BFP but not by Hobbs were made to fail when the alteration was made.* (BNC 898 B2X 831)

Here, the alteration that is referred to as the event causing the computer program to fail clearly precedes the failure itself. (BFP is a computer algorithm designed to carry out pronoun resolution; the cognitive scientist Jerry Hobbs has developed a program with the same function.)

The second relevant distinction presence of unity of space vs. a spatial remove between the causing and caused events (see e.g. Fillmore 1972: 4; Wierzbicka 1975: 494–495). Spatial coincidence of causing and caused events is analysed as more highly transitive than a remove:

presence of unity of space < absence of unity of space

Most of my *make* examples feature the more transitive value, i.e. presence of unity of space, but there are some exceptions. While (23), below, shows that sometimes the classification is facilitated by a place adverbial (i.e. *there*), (24) shows that once again, matters are not always that straightforward, and the context must be taken into account:

(23)   *One of these areas was Russia, especially because the interest that his work had aroused there made him consider the previously unthinkable possibility of a communist revolution occurring in that country.* (BNC A6S 604)

(24)   *CINEMA* [sic] *workers were made to take lie detector tests after thousands of pounds went missing from a 10-screen UCI complex.* (BNC CBF 12020)

Example (23) describes the effect that the Russians' reaction to Karl Marx's books had on him, at a point when he was clearly not in Russia. In (24) the cinema workers are presumably told at work to go and take the lie detector test at some place like the police station.

While unity of time and unity of space are applicable relatively straightforwardly to my corpus, the third parameter is not. This parameter concerns the absence or presence of another causal participant in between the causer

and the causee (see e.g. Jackendoff 1972: 28; Dixon 2000: 70). If such an intermediary party is absent, the causer transfers force to the causee directly and the event is thus more transitive than if there *is* such an intermediary. For a clear illustration of a tripartite causal chain consider:

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

The speaker did not *directly* make *her* lose her temper. Instead, this was brought about by the intermediary event of John's taunting her.

   The problem in the present study is that in the passive the causer is almost always left out. This renders it hard to determine whether there is a third (implicit) causal participant. To see that this is so, consider the passive version of (25) presented below as (26), which is admittedly strained but serves to illustrate the point (the causative verb in this case has been changed to *make* since passive *have* would have been ungrammatical):

(26) *She was made to lose her temper.*

How now, can one be sure what/who is the causer? And so how does one decide between presence and absence of an intermediary party? The corresponding active sentence might be (25) but for all we know (26) could also be the passive of a direct causal chain:

(27) *I made her lose her temper (by taunting her).*

For this reason the property of absence vs. presence of an intermediary causal party is omitted from the present investigation. One might argue that as a result too much weight is shifted toward unity of time/space, but I suggest in §4 that there is a more serious problem. In practice, the omission of the third subparameter means that in scoring the examples directness can be treated as ternary:

unity of space and time < absence of unity of space/time < absence of
unity of space and time

2.2.4. Sphere of control (SC)

Hopper and Thompson do not discuss this dimension, but it has been alluded to by Katz (1977: 216), Givón (1980: 368), Shannon (1987: 8, 11, 173, 182–183), Duffley (1992: 71), Fischer (1996: 256) and Stefanowitsch (2001: 136–137, 152) though never explicitly in relation with transitivity. The basic idea here is that causation is sometimes seen as occurring against a background assumption of inherent control of the causer over the causee. The following examples show that this control frame is part of the semantics of *have*:

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

(29) ?*She had her boss order some coffee.*

Force is in this respect the opposite of *have*: it codes a clear absence of a control frame; this is the very reason why the use of force must be resorted to. The use of force renders the causative situation more highly transitive than situations portrayed by *have*, where the successful outcome of the causer/causee manipulation is already implicit in the social/physical power relation between them. As the causatives *cause, get, make* and *persuade* do not seem to portray either a strong presence or absence of a control frame, the hierarchy has three values:

$$-SC < \pm SC < +SC$$

2.2.5. Specificity

Specificity is not mentioned by Hopper and Thompson (1980) but Rice argues that it plays a role in transitivity, such that all other things being equal more specific events are more highly transitive than less specific ones:

(30) *The narrow footbridge was walked on / tread on / run on / trampled on / stumbled on / wobbled on / slid on / slipped on / *gone on by the kindergartners.* (Rice 1987: 98)

Make is always equally unspecific. However, Hollmann (2003: Chs. 5–6, cf. also 2005) shows, on the basis of (FLOB) corpus data, that variation does obtain *across* causatives. Specifically, in addition to a general lack of specificity, causatives may be restricted to a particular type of causer/causee configuration. *Force*, for instance, which occurred 68 times, never had an inanimate causee. Similar degrees of specificity hold for most of the other causatives under consideration, viz. *cause, get* and *have*. *Persuade* is even more specific: not only does it almost without exception code inducive causation (93 per cent of cases), it typically specifies that the causer interacted with the causee *verbally*. This suggests the following 3 point scale:

verbal inductive < causation type restricted < causation type underspecified

2.3. The scoring system

Every example is rated against each of the properties making up the 3 parameters causality, aspect and directness. In the scoring process I assigned the score 0 to the minimally transitive value, every more highly transitive value receiving a rating of the next integer, i.e. 1, 2 or 3 (with 4 points the causation type hierarchy has the highest number of values). It is crucial to observe that the parameters are analysed as ordinal, as opposed to interval or ratio variables. That is, while the higher value associated with a higher point on a given hierarchy represents increased transitivity as compared to a lower point, I make no assumptions as to the exact quantitative nature of this increase. For example, with reference to the 4 point causation type scale, inducive causation (e.g. ex. [24]) receives a score of 3 but this type is not seen as 1.5 times as transitive as volitional causation (e.g. ex. [19]) – which is scored 2 – or 3 times as highly transitive as affective causation (e.g. ex. [23]) – which gets a score of 1. Contrast this with a ratio variable, e.g. length: 2 inches is exactly twice as long as 1 inch. Moreover, interpreting the properties as ordinal variables also implies that I do not assume that the difference in degree of transitivity between the affective and the volitional type is necessarily the same as that between the latter and inducive causation. Compare in this connection again a ratio variable such as length (the difference between 1 inch and 2 inches equals that between 2 and 3 inches) or an interval variable such as temperature (although 3 degrees Celsius cannot be meaningfully said to be 1.5 times as warm as 2 degrees

and 3 times as warm as 1 degree, the increments between the temperatures of 1, 2 and 3 degrees are exactly the same). The only thing that matters is the *ranks* of the points: thus, in the case of causation type the score of 3 merely codes the fact that the inducive type is more transitive than volitional causation, which, in its turn outranks affective (and physical; e.g. ex. [31], below) causation.

(31)   *The jacket was very fitted and single-breasted, cutting in sharp at the waist – which made the trousers balloon right out.* (BNC A6E 452)

In other words, as long as one makes sure that the scores associated with the different points reflect the ranking, in terms of transitivity, of the causation types, one could equally well choose, say, 5, 6, 14 and 80. Moreover, as what matters are ranks not absolute values, my scores do not imply that the highest value on the 4 point causation type scale (scored 3) is more highly transitive than that on a binary scale such as punctuality (scored 1). In fact, anticipating the discussion of the results in Section 4, let me note that initially equal weighting of the parameters will be assumed, i.e. scoring the maximum value on one parameter is analysed as contributing to overall transitivity just as much as on another property.

The issue of inter-rater reliability deserves to be mentioned here as a methodological limitation in my methodology (as well as in that of corpus linguistic studies rather more generally [Stefanowitsch personal communication]). Very briefly, the problem is that different analysts may arrive at different interpretations of some examples Thus, for instance, on my interpretation of example (24), above, the explicit mention of the cinema in the word *CINEMA workers* implies spatial (and temporal) distance between the main clause and lower clause events. It is not inconceivable, however, that another analyst would take a more coarse-grained view of the space (and time) frame, and judge this to be a case of spatiotemporal contiguity. Ideally, then, one would have several people analyse the same data then average the results. For reasons of time this has not been attempted here.

3.   Results

Below, the results the past and present corpora are considered separately and together. Given the ordinal nature of the variables, in determining the significance (or lack thereof) of the differences between active and passive the Mann Whitney U-test (1-tailed) was used.

3.1. Causality

Affectedness of O and participants do not yield significant results; causation type does:

Table 2. U-scores of the past, present, and combined corpora for causation type

Simple past	Simple present	Past + Present
2403.5	2526	9872.5

The differences are very highly significant (p<.001) across the board here, conforming to the implications of Hopper and Thompson (1980).

3.2. Aspect

Kinesis and aspect are not significant but punctuality is, at least to some extent:

Table 3. U-scores of the past, present, and combined corpora for punctuality

Simple past	Simple present	Past + Present
4950	4700	19500

For the simple past there is no significant difference but there is in the simple present data (p<.05), where the passive causatives are on the whole more transitive than the active ones. For the combined corpus p drops to .13. This is not normally seen as significant but the U-test is a relatively weak test (this is because it makes very few assumptions concerning the interpretation of the differences between values and regarding the distribution, as compared to e.g. the t-test). Thus, the result for the combined corpus warrants the hypothesis that there is a correlation, and that a statistically significant result may be obtained with a larger corpus.

3.3. Directness

Table 4. U-scores of the past, present, and combined corpora for directness

Simple past	Simple present	Past + Present
4740	4901	19685.5

The differences do not pass the test for significance at p<05 but for the past there is an association between passive and increased transitivity at the p=.13 level. This, as argued in §3.2., suggests that a correlation may well exist. For the present and combined corpora p drops to .21 and .28, but one still suspects that a larger sample would yield more conclusive evidence for the hypothesised correlation (see further §4, below).

4. Implicational universals

This section presents the implicational universals that may be proposed to capture the relation between the semantics of causatives and their degree of passivisability. After the statement of each universal I outline its implications concerning the expected degree of passivisability of the causatives considered in addition to *make*. In the process I draw on the corpus-informed semantic analysis of causatives presented most elaborately in Hollmann (2003, cf. also 2005). There is no space here to present the details of this analysis. The first universal, arising from my corpus data on aspect, concerns causation type:

Implicational universal 1 (causation type)

If a language allows passivisation of causative constructions towards the lower, less transitive end of the causation type scale then constructions toward the higher, more transitive end of the scale will also be passivisable (all other things being equal).

Get, have and *persuade* prototypically portray inducive causation (>90 per cent of cases in my FLOB data) and are thus highly transitive. *Cause* is on the other end of this dimension of transitivity, as it typically occurs with inanimate causers (physical/affective causation, >85 per cent). *Force* is somewhere in the middle: it often features a human causer and causee (inducive causation, 46 per cent) but also freely takes inanimate causers (the

affective type 54 per cent). *Make* is similar to *force* in not being clearly associated with either end of the scale, but in addition to the inducive (33 per cent) and affective (42 per cent) types it is not infrequent with the volitional and physical configurations (13 and 12 per cent, respectively).

The second parameter describes the effect of punctuality:

Implicational universal 2 (punctuality)

If a language has passivisable causative constructions that (prototypically) describe non-punctual, then punctual causatives are also passivisable (all other things being equal).

Cause, get, have and *make* prototypically describe punctual causation and therefore outrank *get* and *persuade* on this parameter, as the latter are associated with non-punctual causation (these facts have been established mainly on the basis of collocation with adverbials coding duration of time, such as *gradually* or *finally*, cf. e.g. [12], above).

Directness is the third property. The results did not unambiguously suggest that it played a significant role. However, *make* was an unfortunate choice to test its bearing on passivisability/transitivity, because it almost invariably features direct causation. In a follow-up study one might want to investigate a causative that is more compatible with both values. It is not clear that there is such a construction in English. The ones considered here all usually describe direct causation, except for *cause*, which is strongly associated with indirectness. If a suitable causative could be found, in English or elsewhere, the expected universal would be:

Implicational universal 3 (directness)

If a language allows passivisation of causative constructions prototypically portraying indirect causation then constructions describing direct causation will also be passivisable (all other things being equal).

Thus far I have focussed on the role of the parameters that could be tested on the corpus data. But in §§2.2.4.–2.2.5. I argued that the sphere of control frame and specificity also play a role. And indeed universals 1–3 are clearly not sufficient to account for the English facts. Consider for example that *have* is situated at the maximally transitive ends of the punctuality, causation type and directness scales but does not passivise. Also, *get* and *persuade* are semantically identical with respect to punctuality, causation type and directness, yet the former only passivises marginally. Moreover, it is

not obvious from the three universals proposed so far how the relative ease of passivisation, crosslinguistically, of "force" type causatives (see examples [3–8], above) is to be explained.

The universals arising from my discussion of the impact, on transitivity, of the sphere of control frame and specificity go some way towards explaining these facts:

Implicational universal 4 (sphere of control)

If a language allows passivisation of causative constructions which specify that causation occurs against the background of a sphere of control, then causatives that do not feature that background assumption also passivise (all other things being equal).

Implicational universal 5 (specificity)

If a language allows passivisation of causative constructions prototypically associated with the lower end of the specificity scale then constructions that are associated with the higher end of the scale will also be passivisable (all other things being equal).

Given the presence of a control frame (SC) in *have*, and the absence thereof in *force* universal 4 helps explain the lack of passive causative *have,* and the relative ease of passivisation of *force*, in English and in other languages. Universal 5 sheds light on the higher degree of passivisability of *persuade* as compared to *get*, while also reinforcing the high transitivity, across languages, of 'force' type causatives as compared to the more neutral constructions.

Universals 4 and 5 have brought us closer to a comprehensive explanation of the facts passivisation of causatives. However, some problems still remain, as becomes clear from Table 5 below, which presents the scores of the causatives under consideration across the five parameters. The transitivity scores are represented as high-low or high-mid-low, depending on whether the parameter in question has two or three values.

Table 5. Scores for *cause, force, get, have, make* and *persuade* on the transitivity parameters

	Causation type	Punctuality	Directness	SC	Specificity
cause	low	high	low	mid	mid
force	mid	high	high	high	mid
get	high	low	high	mid	mid
have	high	high	high	low	mid
make	mid	high	high	mid	low
persuade	mid	low	high	mid	high

I suggest that the problems may be due to the assumption that all parameters are equally important. First, comparing *cause*, *get* and *make* on the one hand, to *have*, on the other, the equal weighting assumption would predict that *have* would be easier to passivise than *cause*, *get* and *make*. *Have* outscores *cause* on directness, *get* on punctuality, *make* on specificity, and both *cause* and *make* on causation type. The absence of a +SC component in the semantics of *cause*, *get* and *make* is therefore presumably significant enough, relative to directness, punctuality and specificity, to give them the overall edge over *have*. Second, the greater ease of passivisation of *cause* as compared to *get* suggests that punctuality is substantially more important than causation type and directness together, for it is on the former property that *cause* outscores *get*. On the latter two the tables are reversed. Third, to the extent that *cause* is lower in passivisability than *persuade* one may infer that specificity is relatively salient, too, compared to causation type and directness. This is because if punctuality weighs more heavily than causation type and directness, then specificity is the only parameter from which the higher degree of transitivity of *persuade* as compared to *cause* may derive. Note, incidentally, that *cause* is also less passivisable than *force* and *make*, but in contrast to *persuade* these constructions are not outranked by *cause* on punctuality.[20] (Hollmann [2004] argues that differential weighting raises some questions in relation to semantic theory.)

5. Conclusion

In this paper I have tried to account for the facts of passivisation of English periphrastic causatives. This has not often been attempted before, Stefanowitsch (2001) being the only other detailed study. The main advantage

of the present discussion is that the conclusions have taken the guise of implicational universals. (Nonetheless, it should not be surprising if the need arises for minor adjustments in the light of crosslinguistic evidence).

Elevating the discussion to a more abstract level, let me briefly reflect on the innovative aspect of the approach taken here to a motivated correspondence between linguistic form (passivisability) and function (transitivity). I have shown how, in cases where one has reason to suspect that several semantic factors are at work, one may go about approaching the issue from a quantitative point of view. Corpus data may be collected and scored for the factors in question. Using statistical tests one may then assess the relevance of the various parameters. The analysis should not be carried out too mechanically or "blindly". The present study was limited by certain aspects of the meaning of *make*, such as its prototypical association with directness. It was seen that by keeping one's eyes open to these limitations, which sometimes creep in almost inevitably, one may still be able to draw conclusions, or at least propose educated hypotheses (such as implicational universal 3, above) regarding issues where the limitations obscure the quantitative evidence.

Notes

1. Bill Croft and David Denison provided invaluable advice on many of the issues dealt with here. My gratitude extends to Sylvia Adamson, Stefan Th. Gries, Dick Hudson and Anatol Stefanowitsch for useful discussion of several points.
2. I am grateful to Gary Toops for drawing my attention to this reference.
3. This example features the so-called *Ersatzinfinitiv* (viz. *laten* 'let', *doen* 'do'), i.e. an infinitive where one would normally expect a participial complement. The use of the infinitive in this example is motivated by a rare example of passive causative *laten* found on the internet:

     (i) *Niemand   heeft   in maanden   aan   Banana   gedacht,   totdat*
         no one   has   in months   on   Banana   thought,   until
         hij leeg   werd   laten   lopen   door   Ramon.
         he empty   became   let   walk   by   Ramon
         'For months no one thought of Banana [an inflatable banana shaped toy, WBH], until it was deflated by Ramon.'
         ⟨http://www.geocities.com/bacardifela/banana2.html [3 October 2002]⟩

   This example does not prove that periphrastic causative *laten* is generally passivisable. Talmy (2000: 413, 419) argues that the kind of causative relation portrayed by (i) is notionally very different from the intended meaning in (6),

the former but not the latter involving enablement/permission (what Talmy calls "cessation of impingement"). This special category of causatives is beyond the present scope, but see Hollmann (2003: 207–208) for some discussion.

4.   I would like to thank María Eugenia Vázquez Laslop for her helpful suggestions concerning the Spanish facts.

5.   I focus on *cause, force, get, have, make* and *persuade* partly because scholars (e.g. Baron 1977) often treat *get, have* and *make* as the "central" periphrastic causatives. Sometimes, *cause* and/or *force* are also discussed (see e.g. Dixon 1991). *Persuade* is included mainly because it is semantically similar to *get* yet differs in terms of passivisability. In addition, in my data (the FLOB corpus; see main text and n. 8) it is rather frequent, being the most common periphrastic causative after *make* and *force*.

6.   While corpus evidence is important in this connection, in the sense that given a sufficiently large and representative corpus there must be some correlation between the percentage of passive tokens of a construction and its passivisability, I would not necessarily *equate* corpus frequency with degree of passivisability. See in this connection e.g. Schütze (1996: 2) for a vindication of native speaker intuitions (though cf. also Schütze [1996: 4] for the suggestion that this methodology is usually not used with appropriate scientific rigour).

7.   The BNC is a 100 million word corpus of spoken and written Present-day English; for more information see e.g. Aston and Burnard (1998).

8.   FLOB contains 1 million words of Present-day British English newspaper prose (for more information see e.g. ⟨http://helmer.aksis.uib.no/icame/ manuals.html⟩ [28 May 2004]).

9.   The infinitival complement clause may itself contain an A/O distinction, and indeed passivisation may not only occur on the causee but on the O argument of such a transitive lower clause as well: *[…]he used to go on board with his book and get it signed by the mate or the er captain of the ship* (BNC ADM 2056), where the corresponding form with an active complement clause would be *he used to […] get the mate or the captain of the ship to sign it*. This type of passive will not be considered here, but see Stefanowitsch (2001).

10.   The other reason why *cause* is not seen as basic in the same way as *force, get, have* and *make* is token frequency: in Stefanowitsch's data (based on the Switchboard corpus, a 3 million corpus of spoken American English telephone conversations; for more information see e.g. ⟨http://wave.ldc. upenn.edu/Catalog/docs/switchboard/manual.html⟩ [28 May 2004]) *cause* is considerably less frequent than the four causatives he does discuss. However, Hollmann (2003: 156) found that at least in the FLOB corpus it was more frequent than *have* and (marginally) *get*. This suggests that *cause* may be seen as a less peripheral construction if other varieties and/or text types/registers are considered as well.

11. See Siewierska (1984) for a critical appraisal of this position.
12. For more information see ⟨http://www.linguistlist.org/issues/13/13-1709.html⟩ [21 August 2002].
13. It is possible that this search string made me miss out on examples with an adverbial in between *made* and *to*.
14. The other options are "middle sample", "end sample" and "mixed". Beginning sample was the most suitable as it features the highest number of texts. Other ways to restrict the corpus (author gender, author age, dialect, etc.) were also considered but rejected as no such restrictions were imposed on the corpus used for the passive examples. The beginning sample restriction was not imposed there either, but this was less likely to skew the results than sex, age, etc., which sociolinguists have shown often play a role in variation.
15. For an example of ambiguity consider *These safety necessities are cleverly hidden behind panels which were made to look like original military equipment* (BNC CGL 1534), where it is not clear whether *make* is used in its causative or 'create' sense (on the latter interpretation the *to*-infinitive introduces a purpose clause).
16. Another concern here is that while Hopper and Thompson (1980) only distinguish between realis and irrealis it is not clear that a variation on (13) such as *For that violation they* will *be made to pay* is equally transitive as …*they* might *be made to pay*. Intuitively, the higher likelihood of the caused event in the first example implies higher transitivity. Similar observations may be made for deontic modality; consider e.g. *For that violation you must make them pay* vs. *For that violation you may make them pay*. A more sophisticated scale than Hopper and Thompson's may be desirable, drawing on typological work such as Givón's (1980) binding hierarchy proposal. However, this will not be attempted here.
17. Stefanowitsch (2001) also considers affectedness; it is an important dimension of his notion of causee salience. He does not clearly define it, however. At some points it is associated with resistance on the part of the causee (Stefanowitsch 2001: 208) but elsewhere affectedness and resistance are presented as more independent parameters (Stefanowitsch 2001: 87). Stefanowitsch also analyses causees as being more affected to the extent that they are acted on by the causer for a more extended period of time (2001: 209). He does not motivate this connection, and, if anything, it would seem to go against Hopper and Thompson's account of punctuality: punctual events (including causation) are more transitive than non-punctual events. Finally, it may useful to observe that, differently from the position taken here – i.e. that periphrastic causatives always code some degree of impingement hence affectedness –, Stefanowitsch suggests that "the causee … may be *affected* or *non-affected* by the entire event" (2001: 87; emphasis original).

18. Following common practice in scholarship on causatives I analyse human institutional entities such as companies, schools and governments as human, hence mental, entities (see e.g. Verhagen and Kemmer 1997: 64).

19. The implication is that in a comprehensive study of transitivity (i.e. not just causatives) along the lines of Hopper and Thompson (1980) I would argue for a three-way hierarchy with divided self outranking unary.

20. Another line of explanation might be to argue that there are more parameters to be considered. However, one would expect that between Hopper and Thompson (1980), Rice (1987) and the (typological) literature on causatives a reasonably complete picture has emerged.

References

Aikhenvald, Alexandra Y.
  2000   Transitivity in Tariana. In: R. M. W. Dixon and A. Y. Aikhenvald (eds.), *Changing Valency. Case Studies in Transitivity*, 145–172. Cambridge, MA: Cambridge University Press.
Aston, Guy and Lou Burnard
  1998   *The BNC Handbook: Exploring the British National Corpus with SARA*. Edinburgh: Edinburgh University Press.
Baron, Naomi S.
  1977   *Language Acquisition and Historical Change*. Amsterdam: North-Holland.
Bolinger, Dwight
  1978   Passive and transitivity again. *Forum Linguisticum* 3: 25–28.
Cristofaro, Sonia
  2003   *Subordination*. Oxford: Oxford University Press.
Croft, William
  1991   *Syntactic Categories and Grammatical Relations: The Cognitive Organization of information*. Chicago: University of Chicago Press.
  2001   *Radical Construction Grammar. Syntactic Theory in Typological Perspective*. Oxford: Oxford University Press.
  in prep.   Verbs. Aspect and argument structure. Oxford: Oxford University Press.
Dixon, R. M. W.
  1991   *A New Approach to English Grammar, on Semantic Principles*. Oxford: Clarendon Press.
  2000   A typology of causatives: Form, syntax and meaning. In: R. M. W. Dixon and Alexandra Y. Aikhenvald (eds.), *Changing Valency: Case Studies in Transitivity*, 30–83. Cambridge: Cambridge University Press.

Dowty, David
  1991   Thematic proto-roles and argument selection. *Language* 67: 547–
            619.
Duffley, Patrick J.
  1992   *The English Infinitive.* New York: Longman.
Fillmore, Charles J.
  1972   Subjects, speakers, and roles. In: Donald Davidson and Gilbert Har-
            man (eds.), *Semantics of Natural Language*, 1–24. Dordrect: D.
            Reidel.
Fischer, Olga
  1995   The distinction between bare and *to*-infinitival complements in late
            Middle English. *Diachronica* 12: 1–30.
  1996   Verbal complementation in early ME: how do the infinitives fit in?
            In: Derek Britton (ed.), *English Historical Linguistics 1994*, Amster-
            dam/Philadelphia: John Benjamins.
Fodor, Jerry
  1970   Three reasons for not deriving "kill" from "cause to die". *Linguistic
            Inquiry* 1: 429–438.
Gilquin, Gaëtanelle
  2004   Corpus-based cognitive study of the main English causative verbs. A
            syntactic, semantic, lexical and stylistic approach. Ph.D. dissertation,
            Université Catholique de Louvain.
Givón, Talmy
  1980   The binding hierarchy and the typology of complements. *Studies in
            Language* 4: 333–377.
  2001   *Syntax. An Introduction*. 2 vols. Amsterdam/Philadelphia: John Ben-
            jamins.
Hay, Jennifer, Christopher Kennedy, and Beth Levin
  1999   Scalar structure underlies telicity in "degree achievements". In:
            Tanya Matthews and Devon Strolovitch (eds.), *Proceedings of SALT
            9*, 127–144. Ithaca, NY: CLC Publications.
Hollmann, Willem B.
  2003   Synchrony and diachrony of English periphrastic causatives: a cogni-
            tive perspective. Ph.D. dissertation, University of Manchester.
  2004   Semantic maps for complex cognitive domains: The case of transi-
            tivity of causatives. Paper presented at the Forum for Kognitiv Vit-
            skap, University of Bergen, Bergen.
  2005   The iconicity of infinitival complementation in present-day English
            causatives. In: Constantino Maeder, Olga Fischer, and William Her-
            lofsky (eds.). *Iconicity Inside-Out. Iconicity in Language and Litera-
            ture 4*, Amsterdam/Philadelphia: John Benjamins.

Hopper, Paul and Sandra A. Thompson
    1980   Transitivity in grammar and discourse. *Language* 56: 251–299.
Inoue, Kazuko
    1992   *Cause* and *make* in semantic representation. *English Linguistics* 9: 132–151.
Jackendoff, Ray
    1972   *Semantic Interpretation in Generative Grammar*. Cambridge, MA: MIT Press.
Katz, Jerrold J.
    1977   *Propositional Structure and Illocutionary Force: A Study of the Contribution of Sentence Meaning to Speech Acts*. Hassocks: Harvester Press.
Keenan, Edward L.
    1985   Passive in the world's languages. In: Timothy Shopen (ed.), *Language Typology and Syntactic Description, Vol. 1: Clause Structure*, 243–281. Cambridge: Cambridge University Press.
Nedjalkov, Vladimir P.
    1971   *Kauzativnye Konstrukcii v Nemeckom Jazyke. Analiticheskij Kauzativ*. Leningrad: Nauka.
Rice, Sally A.
    1987   Towards a cognitive model of transitivity. Ph.D. dissertation, University of California.
Schütze, Carson T.
    1996   *The Empirical Base of Linguistics: Grammaticality Judgements and Linguistic Methodology*. Chicago, IL: University of Chicago Press.
Shannon, Thomas
    1987   *Aspects of Complementation and Control in Modern German: The Syntax and Semantics of Permissive Verbs*. Göppingen: Kümmerle.
Siewierska, Anna
    1984   *The Passive. A Comparative Linguistic Analysis*. London: Croom Helm.
Stefanowitsch, Anatol
    2001   Constructing causation: A construction grammar approach to analytic causatives. Ph.D. dissertation, Rice University.
Stubbs, Michael
    1996   *Text and Corpus Analysis. Computer-Assisted Studies of Language and Culture*. Oxford: Blackwell.
Talmy, Leonard
    1976   Semantic causative types. In: Masayoshi Shibatani (ed.), *Syntax and Semantics. Volume 6. The Grammar of Causative Constructions*, 43–116. London: Academic Press.

1985   Lexicalization patterns: Semantic structure in lexical forms. In: Timothy Shopen (ed.), *Language Typology and Syntactic Description. Vol. 3: Grammatical Categories and the Lexicon*, 57–149. Cambridge: Cambridge University Press.

1988   Force dynamics in language and cognition. *Cognitive Science* 12: 49–100.

2000   *Toward a Cognitive Semantics. Volume I: Concept Structuring Systems*. Cambridge, MA/London: MIT Press.

Verhagen, Arie and Suzanne Kemmer

1997   Interaction and causation: causative constructions in modern standard Dutch. *Journal of Pragmatics* 27: 61–82.

Wierzbicka, Anna

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