

CAUSATION, COGNITION AND CORPORA – AN INTEGRATIONIST VIEW

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1. Introduction

Any theory of causation must account for the fact that causation is grammaticalized differently in different languages although the core of causative meaning- the cause-effect relationship is a cognitive and experiential universal. The following study presents results of a corpus-based study of English and German in respect to their grammaticalization of causation and causativity. Setting out from a perspective on causation as a multi-modal phenomenon with far-reaching implications in the cognitive, lexical-semantic and syntactic field we recognize the investigation of causative structures as a part of research that focuses on pivotal aspects of cognition and the way they are rendered in language. Sketching causation therefore against the background of studies in cognition we can achieve valuable explanations that hold across a variety of phenomena. By no means we believe to find universals of causation but trends within the data point into certain directions. Therefore, as causation is at the center of human cognition, evidence from different languages will be telling in order to establish some tentative frequency universals or rules that govern the grammaticalization in different languages (see also Talmy, 2000).

In this respect it is revealing to look at causation at the interface of two (or more languages) as any transparent contrast is open to interpretation. This is the case particularly for the perceived causation in exotic languages but also for languages as genetically close as English and German contrast is interesting to look at, especially in the light of important typological differences between English and German. Therefore, as a plea for causation as a sort of general remedy for linguistic research, interpretation leads the way to semantics. As semantics is some sort of conventionalised conceptualization (Langacker, 2002), cognitive interpretation is at hand. In the following study at first the research items will be defined and classified. In the empirical part, data will be subjected to classification and statistical comparison. The central thesis, that causation in contrast enables interpretation of contrastive conceptualisation via corpora will be refined in section 4.

Causation reflects human cognition of cause-effect relationships. This can be derived from gestalt perception and spatiotemporal contiguity. This property is shared by all speakers of all languages, therefore all languages deal with causation (in different grammaticalization patterns).

This paper looks at "causatives" syntactically and semantically. Syntactically, "causative auxiliaries" (like *make* and *have* in constructions like

- (1) They made us march up the hill

can be distinguished from explicit and implicit “causative verbs” (like *cause* and *break*). English is unusually rich in these constructions (AUX + NP + V [+NP]) compared to other languages, even German. For contrastive linguistics and translation studies that offers greater stylistic variation, even if manner, direction or other features are not expressed (as in *roll* or *rotate*).

Semantically, causative verbs can be seen as a field of concentric circles, similar to the figures given below:

The inner circle, causative auxiliaries, is analysed in detail from a corpus-cognitive perspective, i.e. how they are perceived by advanced learners of English (like German university students) and how they are used in native-speaker and translation corpora.

This inner circle of explicit causative auxiliaries is surrounded by other explicit causative verbs, like emotional causative verbs (like *excite*, *arouse*, *evoke* or *whip up FEELINGS*, *reduce sb to [tears]*), neutral resultative causative verbs (like *result in*, *lead to* or *give rise to*) or negative resultative causative verbs (like *incite*, *provoke*, *stir up* or *instigate*) and their respective English collocates.

The outer circles of implicit causative verbs consist of verbs like *break*, *drown*, etc. Here causative meaning is defined as an emerging phenomenon of manner and telicity in all satellite-framed languages like English or German.

The study will also look at a spectrum of effects connected to passivization and paraphrase of these propositions. It will be argued that cause can take over semantic functions of manner for more generic verbs (especially motion verbs).

2. Causation and causatives

2.1. The causative event

Causation is a perceived relationship established between two events due to spatiotemporal contiguity in a repeatable configuration. Event 1 temporally precedes event 2, occurrence of event 2 is perceived to be dependent on the occurrence of event 1. Both form a cause-effect relationship.

Causativity is the lexicalization of causation in which a cause-effect relationship/a causal situation is expressed 1. as a series of simple verbal propositions, 2. as a complex verbal proposition, 3. as one simple proposition, usually the "effect" under neglect of the cause.

The causative event is semantically defined as the occurrence of a verbal event (event 2) under influence of another verbal event 1. The relationship is of the type that event 2 would not have occurred without event 1 taking place. This order is significant for case and grammatical relations. Even though on physical and in most cases also on perceptual grounds both events must be present, the causal event can be grammaticalized as a single event, as a complex event or as a sequence of separate, causally related events. Causally related events form an action chain (Langacker, 2002). The morphemic construction can reflect mentioned complexity as in Nahuatl, *die-CAUS* (ibid) or not as in English, *kill* or German *töten*.

2.2. A typology of causative items

English, together with most other languages has a three-way causative system of grammaticalization (Comrie 1989: 167), as

a) a series of simple verbal propositions

(2) John bought a knife because he needed it

b) a complex verbal proposition

(3) John made us suffer

c) one simple proposition, usually the "effect"

(4) The bottle broke

The causal situation can therefore be grammaticalized as

a) a single event

b) a complex event

c) a sequence of separate, causally related events (action chain) with the following component events:

(5) John made Mary read the text

a) causing/precipitating event John "brought it about that" + b)

b) caused event a) + Mary read the text

Component events can either be lexicalized fully or abbreviated:

(6) The handkerchief blew away,

for cognitive standard situations. The omitted situation (the causing or precipitating event) therefore excludes the causer from the event completely. We know that something caused the handkerchief to move but this is not reflected on the lexical surface. In fact, the causee looks structurally like being in the position of exerting control - the causee occupies subject position/agentive role. This is in accordance with Comrie's view (ibid: 165) that cause is structure-independent. A solution suggested here is that different means to express cause itself merely highlight focal elements of the causative situation and are therefore not rule-based but pragmatically conditioned. This argument is supported firstly by the case-hierarchy of control of the causee and secondly by the heterogeneous nature of the grammaticalization of cause: as prepositional phrases like because of, thanks to, due to, owed to, by dint of etc.; conjunctions like because, so that or, most importantly for all lexical causatives, in the passive by-phrase. Extrapositing the causer makes causation even more explicit, especially in cleft sentences:

(7) It was Bill who did X.

2.3. Lexical causatives

This large class of resultative verbs expresses causation with analytic/auxiliary, morphological and purely lexical means. Cause and effect can be lexicalised with two different verbal elements or conflated into one verb. Within one clause the degree of fusion leads to different types of causatives. These grammaticalization types are:

1. generic/periphrastic/analytic (*make/have/let/get*)
- 2.1. synthetic A (*break, develop, drown...*)
- 2.2. synthetic B: morphological (*soften, enable*)
3. lexical/suppletive (*kill, repair*)

Type 1 which is sometimes called syntactic causative (cf. Torrego 1998: 100 for a discussion on Spanish) has causer in subject position and causee in object position whereas the effect is relegated to a non-finite clause, as in I make/have/let/get John (to) clean the kitchen. Causative have invites multiple ambiguities, as in

(8) I almost had my wallet stolen

German is impoverished in periphrastic/analytic causatives: where English has *make, have, let* and *get*, German has only *lassen* ("let") with a strong permissive semantic component. Others are rare or idiomatized as in *Glauben machen* ("make believe"), *jemanden dazu bekommen, etwas zu machen* ("get somebody to do something") etc. In learner interpretation we can expect therefore a considerably skewed mapping of periphrastics into different lexicalised forms of causation.

The parametrization of phenomena is the reflexive boundedness in the use of nominals and verbal elements that regulate cause-effect. As an expected contender, agency is an important semantic component here, cf. *Willie burns the house*. Agency is bounded by other semantic parameters as animacy and intentionality.

An initial condition that has to be met is therefore the presence of causer

Complex events underlie gradual causal complexification, texts are chains of cause effect relationships, cf.

(9) John makes Mary throw the knife

- a) Intransitive causatives have no object because the subject is affected (e.g. *the ball rolled*).
- b) Transitive causatives can be formed in English with intransitive verbs and affected patient and sometimes a goal, as in *he jumped the horse over the fence*. This is an interesting grammaticalisation effect since the intransitive verb is usually not causative at all.

- c) Mitransitive causatives are also implicit in the sense that they only have the effected person (patient) as an object after them, whereas the effect is incorporated in the verb or understood in the context (e.g. *he encouraged him*).

In traditional grammar causatives are usually restricted to an explicit causative syntax, although they are relatively salient and learned early by foreign learners of English. The standard example here is *have*, where usually a so-called active and passive version are distinguished depending on whether the agent is included syntactically:

- (10) a. I had John fix the car i.e.
 b. I arranged for the car be fixed by John

is clearly a causative because the structure can be replaced by

- (10) c. I caused John to fix the car

although this does not sound very natural. Compare this with

- (10) d. I had the car fixed i.e.
 e. I arranged for the car to be fixed (by someone)

without an explicit patient and with a paraphrase:

- (10) f. I caused the car to be fixed

this includes clearly a basic passive semantics.

2.4. Morphological causatives in English and German

The following table summarizes some of the more frequent morphological causatives in English and German. From a semantic point of view most refer to material properties of concrete objects.

English: A	English: V	German: A	German: V
black	blacken	schwarz	schwärzen
red	redden	rot	röten
blue	*	blau	einbläuen
weak	weaken	schwach	schwächen
sharp	sharpen	scharf	schärfen
cool	cool	kühl	kühlen

Tab. 1: English and German adjectives and deadjectival morphological causatives

As a plausible learner rule to be inferred from a simple pattern matching task, a formula could be proposed as follows:

English/German: Vcaus + (ablaut) -en [MAKE [X(A)]]

The caveat of this simple rule however is that English and German do not form a 1:1 relationship which is not only exacerbated by the lexical gap (there is no English word for **bluen*) but also by the fact that many deadjectival causatives do not use -en like *to cool*.

Furthermore, learner evidence is diminished by the fact that ablaut marking in English is rare and often restricted to lexical causatives as in *He fell the tree = He makes the tree fall* (periphrastic causation) > *The tree falls* (consequence, effect). Wherever stem vowel change in English is used for marking it shows a fossilized character as in plural marking *man – men* or synthetic past tense, *drive – drove*. This phenomenon is balanced to some extent by the fact that English has a high conversion productivity that creates verbs from adjectives, e.g. *cool – to cool*. Productivity of the causative morpheme -en is extremely limited and largely replaced by -ify.

The German system on the other hand differs from the English in the case of the ablaut which is not productive anymore but across the board used for markings, esp. plural as in *Wald – Wälder*. This, however, is largely unpredictable. Further, -en is a generic marker of verb infinitives and therefore no surprise in causatives. The causative meaning is therefore predominantly enforced via particles as in *abschwächen* ("to weaken"), *verschärfen* ("to sharpen"), *abkühlen* ("to cool"), *aufhellen* ("to brighten") or *erröten* ("to blush"). On basis of the systematic differences of the two systems this study proposes that learner models can be tested via elicitation and corpus methods.

3. Cognition and causation

The recognition that two correlating events stand in a certain, undefined relationship toward each other is a pivotal cognitive property. These events are assigned the roles of cause and effect (cause for the temporally preceding, effect for the following event). Together, they form the causative event. In a perceived reality this is usually conditioned by a spatiotemporal contiguity (Langacker, 2002).

Causation in language can be found in a wide spectrum of phenomena. The categorization of causation seems to be bound therefore to different ways of grammaticalization. In cognitive grammar the view is emphasized that causation tracks a thematic relationship through time: the causative construal focuses on an event nucleus that is either temporally transparent or temporally opaque. On the other hand, more elaborate conceptualisation possible involving energy that drives it the causation. This corresponds to a folk law of nature that the magnitude of cause has to be reflected in the magnitude of the effect (a simple formulation of the law of conservation of energy. Only in physical systems remote from balance this "law" is unhinged on complexity grounds. Causative events become more complex because they add layers of energy to energetic situations (Talmy 2000).

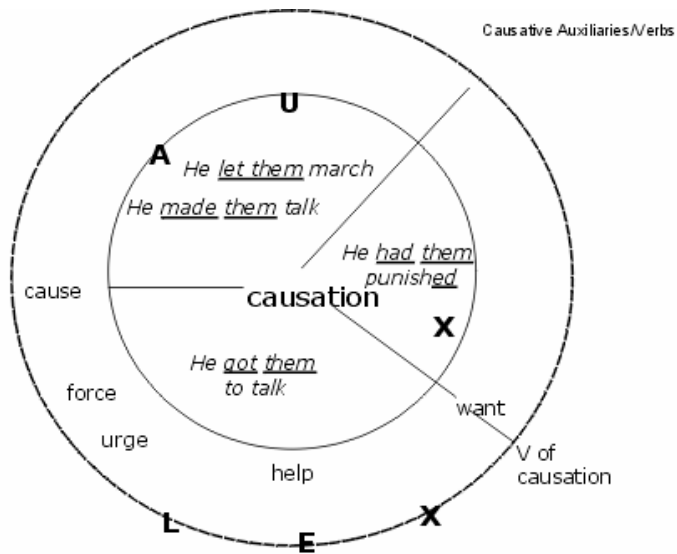


Fig. 1: A conceptual map of syntactic and lexical causatives

The diagram above represents a conceptual map of causatives of the aforementioned types: syntactic and lexical causatives.

3.2. The lexicographic approach

Focal and peripheral members of a category can be illustrated by looking at simple and straightforward ontological clustering as given in standard dictionaries. The following figures summarise the ontological categories from the Longman Activator:

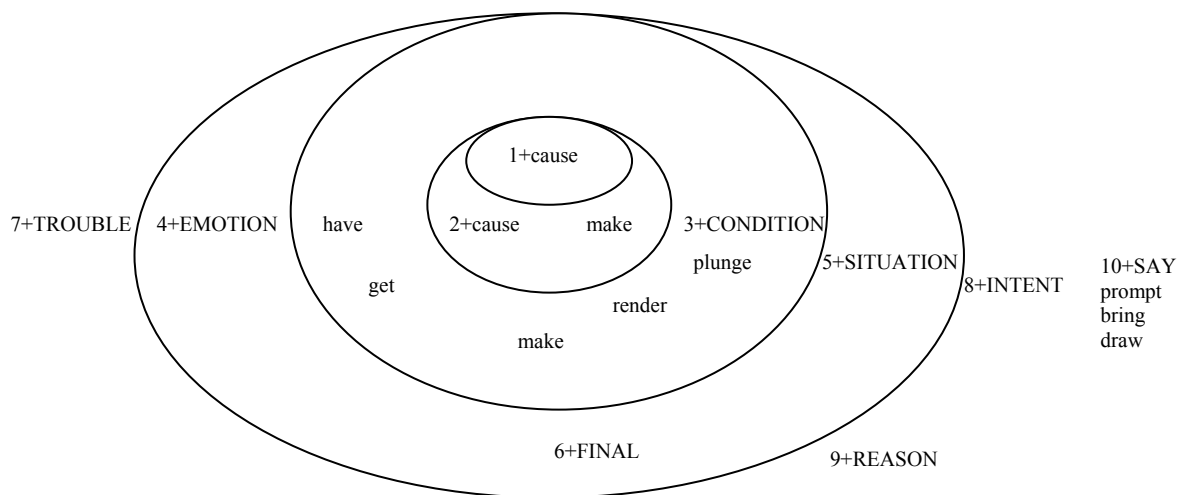


Fig. 2: Semantic field of causative verbs based on the *Longman Activator* 1993: 183-5

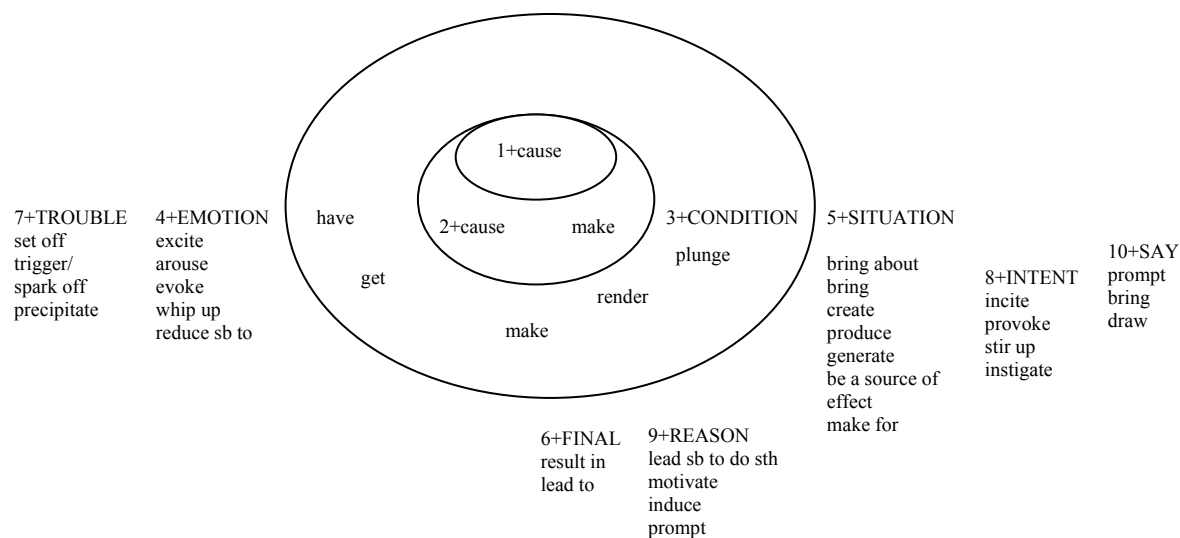


Fig. 3: Causative verbs in English (in the *Longman Activator* 1993: 183-5) and some (strong) implicit causatives

4. Approaches to causatives in corpus linguistics

This contribution intends to show that modern empirical linguistics has developed new methodologies that enable us to come to a more appropriate grasp of causative phenomena through an empirical and gradient perspective. We can use modern corpora to analyse actual language usage much more thoroughly than before. This can be illustrated using the British National Corpus, as a tagged corpus, which allows us to combine lexical searches with syntactic patterns, cf. figure 1). As for a preliminary view on morphological causatives in English a corpus query to the BNC is revealing:

BNCweb lemma query	occurrences	example
Blacken	149 ADA 1811	The pages blackened, crinkled, and
Brighten	402 A7A 141	they darken, in the East they brighten
Cheapen	40 FAJ 253	I ask you not to cheapen her life in your
Deafen	83 B3J 714	The noise was deafening in the small
Deepen	655 CBN 1093	His urge was to deepen.
Fasten	667 A65 1799	It opens at both ends and fastens with
Flatten	594 JY6 2445	She flattened herself against the door.
Harden	662 AD9 31	He hardened his heart and turned on his
Loosen	561 ABX 119	Philip pulled ... the wire to loosen it.
Redden	123 JY0 3466	Juliet felt her cheeks redden.
Ripen	201 H7W 2579	I'm waiting for the beans to ripen.
Roughen	31 HH8 2513	His voice roughened.
Sadden	213 B77 2026	That saddens me.
Sharpen	547 B0U 1353	The little eyes sharpened at the top of
Sicken	107 FAT 2541	Critics sickened him.
Smarten	55 H0M 2922	It smartens its act.
Soften	886 A6L 126	There are ways in which you can soften
Straighten	948 A73 659	A sudden dignity made him straighten
Sweeten	126 HR9 2290	He needed me to sweeten Mrs Danby.
Tighten	1424 C8S 445	His mouth tightened, and he stood up.

Tab. 2: Morphological causative frequencies in the BNCweb

Adjectival productivity can be measured therefore by juxtaposing adjective and corresponding verb occurrences as in table 2.

adj	BNC Web Adj	WPC : BNC	BNC Web Verb	BNC Adj : Verb	V -en	WPC (.uk)	BNC	BNC V-en : V -0	WPC 0 : -en
black	21,798	72	171	127	blacken	5,380	1,493	8.73	289.9
blue	8,805	112	17	518					
bright	5,917	55	3	1972	brighten	37,400	402	134.0	8.69
calm	1,288	92	1262	1					
cool	3,254	170	1347	2					
deep	9,278	73	3	3093	deepen	29,900	655	218.3	22.51
dry	5,423	64	2750	2					
dull	1,750	94	190	9					
fresh	6,754	85	3	2251	freshen	8,800	93	31.00	65.34
green	9,773	840	33	296					

grey	4,463	73	130	34					
hard	17,226	113	3	5742	harden	27,300	662	220.7	71.06
loose	2,502	66	265	9	loosen	18,100	561	2.12	9.12
quick	6,305	423	3	2102	quicken	13,300	321	107.0	200.7
red	12,193	110	2	6097					
ripe	630	102	3	210	ripen	4,540	201	67.00	14.14
rough	3,405	57	111	31	roughen	713	31	0.28	273.5
sad	3,464	50	1	3464	sadden	980	213	213.0	177.5
sharp	4,235	109	1	4235	sharpen	25,500	547	547.0	18.16
sick	4,227	49	7	604	sicken	1,230	107	15.29	168.3

Tab 3: Lexical productivity of deadjectival morphological causatives in English

The cognitive application of corpus as well as elicited data can be seen when learners, on basis of their conceptual model after L1 input from their (learning) environment judge category membership of morphological causatives, cf. Haase, 2006:

BNCweb lemma query		Acceptability judgment score in %; n=44			
Tighten	1424	34	*to soft vs. to soften	66	
Straighten	948	39	*to fast vs. to fasten	61	
Soften	886	48	*to tight vs. to tighten	52	
Fasten	667	54	*to bright vs. to brighten	46	
Harden	662	58	*to straight vs. to straighten	42	
Deepen	655	59	*to sharp vs. to sharpen	41	
...		
Blacken	149	75	*to deaf vs. to deafen	25	
Sweeten	126	79	*to sick vs. to sicken	21	
Redden	123	82	*to sweet vs. to sweeten	18	
Sicken	107	89	*to ripe vs. to ripen	11	
Deafen	83	90	*to smart vs. to smarten	10	
Smarten	55	92	*to cheap vs. to cheapen	08	
Cheapen	40	96	*to loose vs. to loosen	04	
Roughen	31	96	*to rough vs. to roughen	04	

Tab. 4: Frequencies and mean acceptability scores

5. Conclusion

In this contribution we can hope to have shown that corpus cognitive approaches can be used to shed new light on old issues of causativity and that both approaches can complement each other. Both are related to the gradient approach to grammar, which seems a useful approach since it allows a deep understanding of grammatical structures and developments than the traditional categorial approaches.

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