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# Contrastive collostructional analysis: Causative constructions in English and French

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**Abstract**
This paper offers a contrastive collostructional analysis of English and French periphrastic causative constructions with *make/faire* in academic writing. Using data from the British National Corpus (for English) and from Scientext (for French), it investigates the interaction between the constructions and their non-finite verb slot. The (simple and distinctive) collexemes strongly attracted to the *make* and/or *faire* causative constructions are grouped into semantic classes, which are compared and help identify the typical meaning(s) of each construction. It appears that the English construction particularly attracts non-volitional verbs describing mental processes and (stimulus subject) perception, while the French construction also attracts verbs of (dis)appearance and verbs expressing a change of state or location. These results contribute to situating the two constructions differently on the conceptual map of causation.

## 1. Introduction

In his overview article on "cross-linguistic phraseological studies", Colson (2008: 191) distinguishes between "[t]wo major theoretical approaches [that] have so far yielded promising results", namely cognitive linguistics and corpus linguistics. Both of them, he argues, have provided important insights into phraseology across languages. In the present paper, these two approaches to cross-linguistic research on phraseology will be combined with each other into what I will refer to as 'contrastive collostructional analysis'. The method of collostructional analysis relies on the cognitive theory of Construction Grammar and the tools and techniques of corpus linguistics to identify lexical items that are statistically attracted to a specific slot in a given construction. It is here applied to a cross-linguistic comparison, whose aim is to highlight the similarities and differences characterising the phraseological behaviour of constructions in distinct languages.

The construction under study is the periphrastic causative construction, and more precisely the *make* causative construction in English and the *faire* causative construction in French, as used in corpora of academic writing. Despite the apparent closeness of these two constructions, earlier research has brought to light certain differences between them (Cottier 1992), and has also underlined the fact that they are rarely selected as equivalents of each other by professional translators (Gilquin 2008). The focus here will be placed on the non-finite verbs that are used in the English and French constructions, with a view to determining which verbs are attracted to the constructions and, ultimately, what such associations reveal about the typical meaning(s) of the two constructions. In Section 2, the method of collostructional analysis and its link with contrastive linguistics will be briefly presented. Then periphrastic causative constructions in English and French will be introduced. Section 4, on the data used and the methodology adopted, will be followed by the analysis proper, which consists of a frequency analysis of the two constructions, a simple

collexeme analysis of the non-finite verb slot of the constructions, and an exploratory distinctive collexeme analysis making use of the translation of the French verbs into English to obtain a comparable basis. Section 6 will conclude the paper.

## 2. Collostructional analysis and contrastive linguistics

Relying on the theoretical framework of Construction Grammar, which sees language as a repertoire of constructions, i.e. pairings of form and meaning (see Goldberg 1995, 2006), Gries and Stefanowitsch have developed the method of collostructional analysis, which, on the basis of corpus data, seeks to determine the degree of attraction (or repulsion) between a construction and the words filling a slot in this construction (e.g. the verb slot in the ditransitive construction or the noun slot in the transitive construction with *cause*; cf. Stefanowitsch and Gries 2003). The term 'collostructional analysis' covers three different techniques: simple collexeme analysis, which studies one slot in one construction; (multiple) distinctive collexeme analysis, which studies one slot in two (or more) similar constructions; and covarying collexeme analysis, which studies two slots in one construction (see Stefanowitsch and Gries 2003, Gries and Stefanowitsch 2004a, 2004b on these various techniques).

Since its introduction over ten years ago, the method of collostructional analysis has grown in popularity, both among construction grammarians (and cognitivists in general), who can use it to empirically support their theoretical claims, and among corpus linguists, who can thus make their corpus work more theoretically grounded. Collostructional analysis has made it possible to investigate different constructions, answer various research questions and produce many valuable insights. It has been applied to several branches of linguistics, including historical linguistics (Hilpert 2011) and second language acquisition (Gilquin 2012). One field that up to now has hardly benefited from the possibilities offered by the method, however, is that of contrastive linguistics. It is not the case that Construction Grammar and contrastive linguistics are thought to be somehow incompatible. In fact, over the last few years, Construction Grammar has been shown to be an adequate theoretical framework to describe different languages, and also to compare them, as testified by edited volumes such as Fried and Östman (2004) or Boas (2010). Yet, that even the latter does not contain a single reference to collostructional analysis is symptomatic of the fact that the method has not really made its way into contrastive linguistics. An exception to this can be found in the work of Timothy Colleman. In Colleman (2009), a simple collexeme analysis of the verb slot in the Dutch double object construction is carried out and constitutes the main focus of the paper; when relevant, however, the results for the Dutch double object construction are compared with Stefanowitsch and Gries's (2003) results for the English double object construction. This comparison suggests that there is "a partial, but not complete, overlap" (Colleman 2009: 219) between the verb classes that are typical of the construction in Dutch and English. In Noël and Colleman (2010), the approach is more directly contrastive, as it provides an original analysis of both English and Dutch. Two constructions are under investigation, namely the 'accusative and infinitive' (or 'raising-to-object') construction (of the type [X *BELIEVE* Y $V_{to\text{-inf}}$]) and the 'nominative and infinitive' (or 'raising-to-subject') construction (of the type [Y *IS BELIEVED* $V_{to\text{-inf}}$]). The authors adopt a diachronic perspective and rely on corpora representing different periods in time, from 1640 to 1920. For each language and each time period, they perform a

distinctive collexeme analysis which identifies the verbs that are more distinctive for the 'accusative and infinitive' or 'nominative and infinitive' construction, and compare the English and Dutch constructions on this basis. While the comparison itself is rather limited due to the relatively low frequency of the Dutch constructions, it reveals some interesting tendencies and, most importantly for our purposes, demonstrates the feasibility of what will here be called a 'contrastive collostructional analysis', i.e. a cross-linguistic approach to the interaction between words and constructions. In the present paper, this approach is applied to the phenomenon of the periphrastic causative construction, which is described in the next section.

## 3. Periphrastic causative constructions

Periphrastic (or analytical) causative constructions are typically made up of a CAUSER, a CAUSEE, a causative verb and a non-finite complement. They express the CAUSER's successful attempt to influence the CAUSEE in such a way that the CAUSEE performs some act. Periphrastic causative constructions can be found in many languages and are often associated with *make*-verbs (Moreno 1993). In English, *make* is one among several verbs (like *cause*, *get* or *have*) that can be used in a periphrastic causative construction, but it is considered the most prototypical one (Altenberg 2002). *Make* can be used in the active or in the passive and with an active or passive non-finite complement. In this study, for reasons of comparability with French, the focus will be on the active construction, illustrated by (1) and represented as [X *MAKE* Y $V_{inf}$], where X is the CAUSER and Y the CAUSEE, and *MAKE* stands for all the inflected forms of the verb. In French, the equivalent of *make*, the verb *faire*, can also be used in a periphrastic causative construction. Although other verbs can be used with a similar function (e.g. *forcer* 'force', *inciter* 'incite'), they are all more specific in meaning, and *faire* is the only causative verb that is found in the "famous '*faire* construction' often referred to in the syntactic literature" (Achard 2002: 128).[1] In this construction, which Achard (2002) calls VV and which will here be formalised as [X *FAIRE* $V_{inf}$ Y], the non-finite complement immediately follows the causative verb, with which it forms a syntactic unit, and the CAUSEE must come after this verb complex (or before if it is a pronoun). An example of the French periphrastic causative construction with *faire* is provided in (2). While it is normally not possible for the French causative verb or its non-finite complement to be passivised,[2] the use of *faire* as a reflexive verb introduces a passive meaning (e.g. *se faire connaître*, lit. 'REFLEX. PRON. make know'), which makes it an equivalent of the passive construction [X *MAKE* Z $V_{pp}$] (cf. *make oneself known*). However, because the reflexive *faire* construction in French can also be used with an experiential meaning (e.g. *Il s'est fait voler sa voiture*, 'He had his car stolen'), unlike [X *MAKE* Z $V_{pp}$], it was decided to limit the present analysis to active/non-reflexive constructions.

(1) He made her laugh. (Altenberg 2002: 99)
(2) Marie a fait pleurer sa soeur. (Achard 2002: 127)
Mary made cry her sister.
'Mary made her sister cry'

[1] *Laisser* ('let') can be used in the same syntactic structure, but expresses permission rather than causation.
[2] For an exception, see Cottier (1992: 91).

Both the English and the French causative constructions present syntactic peculiarities, like the alternation between bare infinitive and *to*-infinitive with active and passive *make* (*He made her laugh* vs *She was made to laugh*) or the verb complex constituted by causative *faire* and its non-finite complement. As a result, much of linguists' attention has been devoted to syntactic issues (cf. Hantson 1981), whereas other aspects such as the phraseology of causative constructions have largely been neglected. Yet, a study of different aspects of English periphrastic causative constructions (Gilquin 2010) reveals that phraseology is at least as important as syntax or semantics when it comes to the choice of a causative construction in English. It also appears that English causative constructions, and [X *MAKE* Y $V_{inf}$] in particular, show very strong preferences for certain (classes of) verbs in the non-finite verb slot and that these (classes of) verbs tend to be distinctive for one specific construction (Gilquin 2006a). In an attempt to extend this analysis to French periphrastic causative constructions as well as compare the lexical preferences of the English and French constructions, a collostructional analysis of the non-finite verb slot of [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y] has been carried out. The methodology and main results are presented in the next sections.

## 4. Data and methodology

### 4.1. The corpora

The corpus data used for the contrastive collostructional analysis of periphrastic causative constructions in English and French consist of academic writing. The English data come from the British National Corpus (BNC) and are made up of 147 texts for a total of 5,003,007 words, distributed across the six different fields represented in the academic writing section of the BNC, that is, 'humanities', 'medicine', 'natural science', 'politics, law, education', 'social and behavioural sciences' and 'technology, computing, engineering' (see Gilquin 2010: 33 for more details on the composition of the subcorpus). The subcorpus was created and queried through the BNCweb interface (http://corpora.lancs.ac.uk/BNCweb/).

For French, use was made of Scientext (see Tutin and Grossmann 2014), and more precisely a subcorpus of 205 texts and 5,063,315 words corresponding to academic writing in French. The subcorpus covers different fields, namely 'humanities' (linguistics, psychology, educational sciences, natural language processing), 'experimental sciences' (biology, medicine) and 'applied sciences' (electronics, mechanics). [3] It was accessed through the ScienQuest software (http://corpora.aiakide.net/scientext18).[4]

[3] The terminology is that of the Scientext project. More information about (and access to) the corpus can be found at http://scientext.msh-alpes.fr/scientext-site/spip.php?article9.

[4] Note that at the time when the subcorpus was queried, it seemed to be unstable, with the total number of words (and, supposedly, the contents of the subcorpus) changing somewhat over the weeks. The final data were extracted on 15 and 16 June 2015, and no change in the word count was visible during these two days.

### 4.2. Extraction of the causative constructions

Being syntactic structures, periphrastic causative constructions can present a challenge when it comes to their automatic extraction from corpora. The only fixed lexical element in the construction is the causative verb, but both English *make* and French *faire* are high-frequency verbs that can be used with many other functions. In order to avoid extracting large quantities of irrelevant data, it is therefore useful to specify that *make* and *faire* should be followed by an infinitive, which is made possible by the fact that the BNC and Scientext are both part-of-speech (POS) tagged and thus allow for the extraction of word classes like infinitives.

Provided one has access to a POS tagged corpus, French causative constructions are not too difficult to extract automatically because the causative verb and the infinitive follow each other directly, and this combination of *faire* and an infinitive mostly corresponds to a causative construction. French causative constructions were therefore extracted from the Scientext subcorpus by looking for continuous sequences of the lemma *faire* and an infinitive.[5] The search output had to be examined in order to remove hits that were not (relevant) instances of the [X *FAIRE* $V_{inf}$ Y] causative construction,[6] but this noise represented only a small 2%.

In comparison with their French equivalents, English causative constructions are less easy to extract automatically from corpora because, as a rule, the non-finite complement does not immediately follow the causative verb, but is separated from it by a number of indeterminate words corresponding to the CAUSEE. Following a pilot study which helped establish the optimal number of words between the causative verb and the non-finite complement (see Gilquin 2010: 36-43), the data were extracted by looking for a form of the verb *make* followed, within one to seven words, by an infinitive.[7] In the absence of a parsed version of the BNC, no dependency relations could be defined between the causative verb and the infinitive, which means that the output of the query included some irrelevant hits in which the infinitive was not dependent on the causative verb and which had to be discarded one by one.

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[5] Although ScienQuest, relying on the shallow parsing of the corpus, allows the user to add dependency relations between the words that are searched for, this functionality was not used because of the low proportion of noise and the lack of a similar option in the BNC.

[6] Most of these irrelevant hits were instances of the reflexive causative construction (see Section 3); in a number of cases, *fait*, which is one of the inflected forms of the verb *faire* but also a noun, was tagged as a verb but actually corresponded to a noun (in the sequence *de ce fait*, 'hence, as a result', lit. 'from this fact').

[7] In fact, the query also included some POS tags which do not correspond to an infinitive but which were shown by the pilot study to sometimes be mistakenly assigned to the infinitival complement (tag for the base form of a verb and portmanteau tag for the base form of a verb and a singular noun; see Gilquin 2010: 39-42). Note, also, that some causative constructions with a longer distance between *make* and its infinitival complement can be part of the output if the stretch of text between the two elements happens to include an infinitive (or other relevant) tag.

### 4.3. Collostructional analysis

The collostructional analysis to be performed on English and French causative constructions focuses on their non-finite verb slot ($V_{inf}$). Therefore, the first step in the analysis was to manually identify the verb used as an infinitive dependent on causative *make* or *faire*. For each different verb ('type'), the number of occurrences ('tokens') was counted.

Two types of collostructional analysis were carried out, namely a simple collexeme analysis (Section 5.2) and a distinctive collexeme analysis (Section 5.3). The computation of simple collexeme analysis, which considers one slot in one construction, is based on the frequency of the words in this slot of the construction and in the whole corpus. It was therefore necessary to determine the total frequency of each verb in the BNC or Scientext subcorpus. A text file was then created which listed, for each construction ([X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y]), the verbs used in the non-finite verb slot, their frequency in the subcorpus and their frequency in the causative construction. These files served as input to Coll.analysis 3.2a (Gries 2007), thanks to which the simple collexeme analysis was carried out, once for the English construction and once for the French construction.

The second type of collostructional analysis performed in this paper, distinctive collexeme analysis, compares one slot in two similar constructions. This technique, which is usually applied to alternating pairs of constructions (e.g. the ditransitive construction vs the prepositional dative construction or the active vs passive voice), was here applied in an exploratory fashion to the comparison of equivalent constructions in two languages. Because this approach necessarily implies a common basis for the comparison, the French verbs were translated into English and these translations were used as input to the analysis. The most direct counterpart of the French verb in English was favoured, and when necessary the concordance lines were examined to help choose the most appropriate translation. While this process of translation may appear as a gross simplification, since most French verbs can correspond to several English translations depending on the context, it should be underlined that collostructional analysis traditionally relies on forms rather than senses, one form typically corresponding to several senses, which also implies a certain degree of simplification.[8] Having one translation per verb is therefore not very different from relying on the form of a verb, since both can hide a myriad of different senses. A more qualitative approach to the data, consisting in examining the occurrences of the verbs in context when interpreting the results of the analysis and grouping the verbs into semantic classes, should partly make up for this shortcoming. Coll.analysis 3.2a (Gries 2007) was also used for the distinctive collexeme analysis, on the basis of a file including the English verbs and the French verbs translated into English, as well as their frequency in [X *MAKE* Y $V_{inf}$] and/or [X *FAIRE* $V_{inf}$ Y].

For both types of collostructional analysis, the statistical significance of the association between the construction and the lexical item in the $V_{inf}$ slot is calculated by means of a Fisher-Yates exact test and the results are presented in the form of the negative base-10 logarithm of the p-value. The minimum threshold value of statistical

[8] For a sense-based approach to collostructional analysis, see Gilquin (2013).

significance, with $p<0.05$, corresponds to a collostruction strength greater than 1.30103.

## 5. Contrastive analysis of [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y]

### 5.1. Frequency

As a first approach to the comparison between [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y], Figure 1 presents the relative frequency per million words (pmw) of the two constructions in the BNC and Scientext subcorpora. With its 2,015 instances and its relative frequency of 398 pmw, the French causative construction is much more frequent in academic writing than the English construction, which has an absolute frequency of 258 and a relative frequency of 52 occurrences pmw. This difference in frequency can arguably be explained by the competition from other periphrastic causative constructions. As mentioned in Section 3, if we disregard verbs with a specific meaning (e.g. *encourage*, *force*, *induce* or their French equivalents), *faire* is the only causative verb used in a periphrastic causative construction, whereas *make* is one among several verbs that can be found in this type of construction. In academic writing in particular, the [X *CAUSE* Y $V_{to\text{-}inf}$] construction is a strong competitor in English, with a frequency that is close to that of [X *MAKE* Y $V_{inf}$] (Gilquin 2010: 225-226).

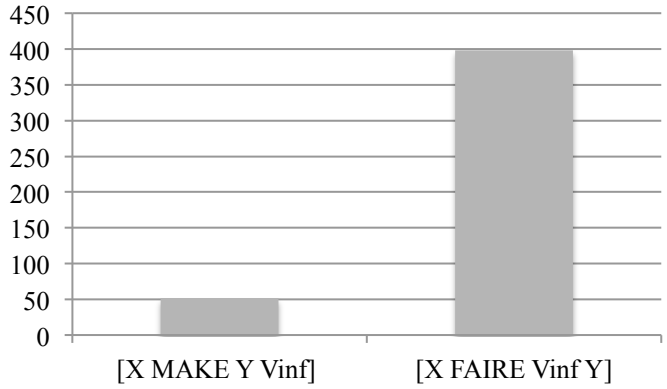


Figure 1. Relative frequency per million words of [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y]

The 2,015 tokens of [X *FAIRE* $V_{inf}$ Y] correspond to 266 types (i.e. different verbs in the $V_{inf}$ slot), while the 258 tokens of [X *MAKE* Y $V_{inf}$] correspond to 108 types. In terms of lexical variation, the English construction thus shows greater variety (type-token ratio = 0.42), whereas the French construction seems to rely more on the repetition of certain verbs (type-token ratio = 0.13).[9] In the next sections, we will use two techniques of collostructional analysis to investigate the degree of attraction between these verbs and the construction, as well as identify the semantic classes of verbs that are typical of the construction in English and French.

[9] Note that this feature seems to be genre-dependent, as a comparison of the two constructions in fiction and journalese reveals a higher degree of repetition in English than in French (cf. Gilquin 2008).

## 5.2. Simple collexeme analysis

The first type of collostructional analysis that was carried out consists in a simple collexeme analysis performed individually on the English causative construction and the French causative construction. On the basis of the observed frequency of each verb (infinitival complement) in the construction and its expected frequency (calculated thanks to the total frequency of the verb in the whole subcorpus), a score of association, called 'collostruction strength', is computed for each verb in either of the two languages. Table 1 shows the 40 verbs (or 'collexemes') with the highest collostruction strength in [X *MAKE* Y $V_{inf}$] (left part of the table) and in [X *FAIRE* $V_{inf}$ Y] (right part of the table).

| **[X *MAKE* Y $V_{inf}$]** | |
|---|---|
| **verbs (obs. freq.)** | **coll. strength** |
| *feel* (21) | 45.594185 |
| *seem* (25) | 45.023448 |
| *appear* (23) | 44.476489 |
| *work* (14) | 24.832698 |
| *look* (10) | 17.327026 |
| *think* (10) | 16.533777 |
| *vanish* (5) | 13.104694 |
| *laugh* (3) | 9.052522 |
| *refer* (5) | 7.730256 |
| *sound* (3) | 7.500258 |
| *conform* (3) | 7.238154 |
| *happen* (4) | 6.978416 |
| *meet* (4) | 6.882195 |
| *behave* (3) | 6.720524 |
| *realis/ze* (3) | 5.856238 |
| *fire* (2) | 5.621829 |
| *jump* (2) | 4.975610 |
| *run* (3) | 4.962980 |
| *wonder* (2) | 4.816702 |
| *want* (3) | 4.637132 |
| *submit* (2) | 4.542523 |
| *understand* (3) | 4.420907 |
| *boggle* (1) | 4.287611 |
| *flutter* (1) | 4.287611 |
| *wobble* (1) | 4.287611 |
| *re-assume* (1) | 3.986593 |
| *shoulder* (1) | 3.685585 |
| *stink* (1) | 3.588686 |
| *take* (4) | 3.537991 |
| *foot* (1) | 3.509516 |

| **[X *FAIRE* $V_{inf}$ Y]** | |
|---|---|
| **verbs 'translations' (obs. freq.)** | **coll. strength** |
| *apparaître* 'appear' (353) | Inf |
| *ressortir* 'stand out' (119) | Inf |
| *intervenir* 'intervene' (130) | 302.385825 |
| *émerger* 'emerge' (84) | 213.563564 |
| *varier* 'vary' (86) | 169.583098 |
| *passer* 'pass' (83) | 143.215017 |
| *évoluer* 'evolve' (56) | 117.952156 |
| *comprendre* 'understand' (71) | 105.428369 |
| *prendre conscience* 'become aware' (31) | 82.343089 |
| *tourner* 'turn' (36) | 80.978811 |
| *remarquer* 'notice' (41) | 75.541609 |
| *progresser* 'progress' (30) | 68.320281 |
| *correspondre* 'correspond' (37) | 43.059626 |
| *fonctionner* 'work' (24) | 42.578823 |
| *entrer* 'get in' (25) | 42.381741 |
| *découvrir* 'discover' (18) | 34.552048 |
| *avancer* 'advance' (19) | 33.033122 |
| *oublier* 'forget' (16) | 31.412067 |
| *subir* 'undergo' (17) | 30.418674 |
| *chuter* 'fall' (10) | 27.087816 |
| *sentir* 'feel' (15) | 26.386941 |
| *figurer* 'appear' (13) | 21.461677 |
| *perdre* 'lose' (13) | 21.108281 |
| *surgir* 'appear' (9) | 21.050127 |
| *disparaître* 'disappear' (11) | 19.640623 |
| *vivre* 'live' (12) | 19.476658 |
| *croire* 'believe' (12) | 19.460579 |
| *produire* 'produce' (19) | 18.942661 |
| *valoir* 'hold' (10) | 17.645875 |
| *travailler* 'work' (13) | 17.051179 |

| | | | |
|---|---|---|---|
| *salivate* (1) | 3.509516 | *commuter* 'commute' (7) | 16.982207 |
| *stand* (2) | 3.462761 | *bouger* 'move' (8) | 16.894789 |
| *come* (3) | 3.454348 | *penser* 'think' (15) | 16.182384 |
| *affront* (1) | 3.442580 | *basculer* 'topple' (6) | 15.972633 |
| *tremble* (1) | 3.384599 | *douter* 'doubt' (7) | 15.505541 |
| *do* (5) | 3.299989 | *baisser* 'decrease' (6) | 14.450814 |
| *jeopardis/ze* (1) | 3.287712 | *entendre* 'hear' (12) | 13.581230 |
| *bestow* (1) | 3.173802 | *sortir* 'get out' (8) | 13.161802 |
| *pay* (2) | 3.117997 | *naître* 'arise' (7) | 13.074202 |
| *bite* (1) | 3.083659 | *peser* 'weigh' (7) | 13.022520 |

Table 1. Top 40 simple collexemes in the $V_{inf}$ slot of [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y], with observed frequency and collostruction strength[10]

All the results in Table 1 are statistically significant, with $p<0.001$ (and collostruction strength greater than 3). It appears, however, that the index of collostruction strength is much higher in [X *FAIRE* $V_{inf}$ Y] than in [X *MAKE* Y $V_{inf}$], which indicates that there might be a closer association between the causative construction and its infinitival complement in French than in English. Results from a simple collexeme analysis of [X *MAKE* Y $V_{inf}$] in a spoken section of the BNC suggest that this might partly be due to register and to the frequency of the English construction (which is over three times as frequent in speech as in writing), as the top collexemes in spoken English reach a collostruction strength close to 300, that is, almost as high as the top collexemes of [X *FAIRE* $V_{inf}$ Y] in writing.

Despite this difference in the degree of attraction between the construction and its infinitival complement, a comparison of the top 40 collexemes of [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y] reveals some overlap between English and French. The most striking similarity is that a large number of the most strongly attracted collexemes do not depend on the subject's (i.e. CAUSEE's) will. They are non-volitional verbs which happen without the CAUSEE's deliberate choice to take part in the events they describe. This is illustrated by (3) and (4), which use one of the top ten collexemes in English and French, respectively.[11] Note that verbs in Table 1 that could theoretically be used volitionally or non-volitionally are predominantly used non-volitionally (see Gilquin 2013 for English), either because the sense of the verb in context is non-volitional, e.g. (5), or because the construction presents an inanimate CAUSEE that inherently lacks volition, cf. (6). That the two causative constructions should attract non-volitional verbs is surprising in itself, given that these constructions tend to be prototypically associated with direct manipulation, which involves animate participants and volitional verbs (see Gilquin (2006b: 174-175) on causative *make*).

[10] It should be noted that for the English verbs, including the English translations of the French verbs (Section 5.3), the particles of phrasal verbs were not taken into account in the collostructional analysis, since it was not possible to automatically determine the overall frequency of phrasal verbs in the corpus data with sufficient precision.

[11] The translations of the French corpus examples are my own.

(3) It **made** Callaghan **seem** untypically fragile and lacking in confidence. (BNC A66 304)
(4) **faire comprendre** à un élève ce qu'il ne comprend pas ('make a pupil understand what he does not understand') (Scientext 617)
(5) But the Hillsborough Agreement **made** Mrs Thatcher **look** credible and constructive over Northern Ireland in the eyes of world opinion, and especially in the United States. (BNC A66 1388)
(6) il faut **faire entrer** ces pratiques dans les classes et les intégrer dans l'ensemble des apprentissages scolaires ('one has to make these practices enter the classrooms and integrate them into the whole of school learning practices') (Scientext 479)

Among these non-volitional verbs, mental processes figure prominently in both English and French. The top collexemes in Table 1 include several of them: *think*, *realise*, *wonder*, *want*, *understand* and *boggle* in English; *comprendre* ('understand'), *prendre conscience* ('become aware'), *oublier* ('forget'), *croire* ('believe'), *penser* ('think') and *douter* ('doubt') in French, as exemplified in (7) and (8).

(7) A close study of the textual variants of this poem **makes** one **wonder** how much value Wordsworth really put on the words of a poem as opposed to its message (BNC CAW 1074)
(8) les enseignants considèrent qu'ils se doivent de **faire prendre conscience** aux étudiants de ces attitudes de "consommateurs" ('teachers consider that they have to make students become aware of these "consumer" attitudes') (Scientext 577)

Another class of verbs that is common to [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y] is that of perception verbs. The top 40 collexemes include *feel*, *seem*, *appear*, *look*, *sound*, *remarquer* ('notice'), *découvrir* ('discover'), *sentir* ('feel') and *entendre* ('hear'). There are differences in the way these verbs are used in the two languages, though. First, the English perception verbs are more strongly attracted to the causative construction, with *feel*, *seem*, *appear*, *look* and *sound* all appearing in the top ten list of collexemes. In French, on the other hand, the first two perception verbs, *remarquer* ('notice') and *découvrir* ('discover'), rank in $11^{th}$ and $16^{th}$ position respectively (and perception through the senses is arguably less predominant in the meaning of these verbs than the mental aspect), while a verb like *entendre* ('hear') comes even further down the list. The other difference is that the French verbs mostly refer to the direct perception of an object by the CAUSEE who is the perceiver. Consider example (9), where the CAUSEES, *les locuteurs* ('the speakers'), perceive sequences. In English, the collexemes tend to behave as "stimulus subject perception verbs" (Levin 1993: 187-188), used with a predicative adjunct to the object and with a CAUSEE that represents the stimulus rather than the perceiver, as exemplified in (10).

(9) L'intérêt de la méthodologie du test d'intuition est qu'elle permet de "**faire entendre**" des séquences aux locuteurs. ('The interesting thing about the methodology of the intuition test is that it makes it possible to make the speakers hear sequences') (Scientext 598)
(10) It's difficult to avoid **making** his suicide **sound** too purposeful. (BNC A18 338)

Verbs of appearance (or disappearance) are particularly attracted to the French causative construction. Collexemes belonging to this category include *apparaître* ('appear'), *ressortir* ('stand out'), *émerger* ('emerge'), *figurer* ('appear'), *surgir* ('appear'), *disparaître* ('disappear') and *naître* ('arise'), cf. (11). Some of these verbs are very high in the list of collexemes, which points to a strong attraction between the French causative construction and the idea of appearance. The English list contains one verb of disappearance, namely *vanish*, shown in (12). Although it also includes the verb *appear*, it will be noticed that this verb was mentioned above as one of the perception verbs. This is because when the verb is found in a causative construction in the data, it does not describe the appearance of the CAUSEE, but an impression conveyed by the CAUSEE, as illustrated by example (13). This is to be contrasted with the direct equivalent of *appear* in French, *apparaître*, which clearly indicates that some (concrete or abstract) entity has appeared, as in (14).

(11) Les résultats de nos analyses ne permettent pas non plus de **faire émerger** des tendances ('The results of our analyses do not make it possible either to make tendencies emerge') (Scientext 560)
(12) None of the operations I (I, j), I(k), I(l), in so far as they affect the minors, can make a minor of order r + 1 nonzero, nor **make** the minor of order r **vanish**, since they merely condense these minors. (BNC EWW 269)
(13) Above all, this fear arises in work where the police encounter outsiders whose job it is to **make** them **appear** wrong or incompetent -- mostly court duty. (BNC A5Y 804)
(14) Le test non paramétrique de Kruskal Wallis **fait apparaître** une diminution significative de ce type de production ('The non-parametric Kruskal–Wallis test makes a significant decrease in this type of production appear') (Scientext 598)

There is another class of verbs that is attracted to [X *FAIRE* $V_{inf}$ Y], namely verbs expressing a change of state (*varier* 'vary', *évoluer* 'evolve', *progresser* 'progress', *baisser* 'decrease') or a change of location (*passer* 'pass', *tourner* 'turn', *entrer* 'get in', *chuter* 'fall', *commuter* 'commute', *bouger* 'move', *basculer* 'topple', *sortir* 'get out'), e.g. (15) and (16). Interestingly, change of state or location is a meaning that is strongly associated in English with the causative construction with *cause* (see Gilquin 2006a, where the distinctive meaning of [X *CAUSE* Y $V_{to\text{-}inf}$] is described as 'to cause a transformation or specific movement'). This probably explains why verbs expressing a change of state or location do not rank high on the list of collexemes of [X *MAKE* Y $V_{inf}$], with the possible exceptions of *jump*, *run*, *flutter*, *wobble* and *tremble* – most of which correspond more precisely to what Levin (1993: 217) refers to as "verbs involving the body".

(15) L'algorithme d'apprentissage **fait varier** les caractéristiques des deux forces opposées ('The training algorithm makes the features of the two opposing forces vary') (Scientext 586)
(16) il est plus facile pour les molécules de la **faire bouger** ('it is easier for the molecules to make it move') (Scientext 585)

We can also briefly mention a group of verbs that are relatively infrequent in the data but significantly associated with [X *MAKE* Y $V_{inf}$]: *re-assume*, *shoulder*, *take* (in some of its occurrences) and *foot*, which all have the meaning of 'taking upon oneself'. This

class of collexemes, which seems to be specific to the English construction, is illustrated in (17).

(17) It does indeed **make** those who require nursing care through no fault of their own **shoulder** the cost. (BNC FT5 1114)

Finally, simple collexeme analysis highlights verbs that are repelled by the construction. This is the case of all verbs that are not attested in the construction, obviously, but also of certain verbs that are very frequent overall in the language but extremely rare in the construction. The results of the present analysis include two repelled verbs, one in English, viz. *be*, and one in French, viz. *donner* ('give'). Although only the former is statistically significant, it is interesting to try and understand why these two verbs are characterised by a relation of repulsion with the causative construction. In the case of *be*, this seems to be due to the fact that a construction of the type [X *MAKE* Y *be*] (which, incidentally, is often found in non-native English, cf. Gilquin 2010: 263) is more naturally expressed by an adjectival or nominal causative construction, e.g. *make someone happy* (instead of *make someone be happy*) or *make someone president* (instead of *make someone be president*). In the case of *donner* ('give') in French, the repulsion may be linked to the ditransitivity of the verb and the required juxtaposition of three elements in a causative construction with a ditransitive verb, namely the THEME, the RECIPIENT and the CAUSEE, which makes the structure quite complex, cf. *J'ai fait envoyer la lettre* [THEME] *à Jean* [RECIPIENT] *par Albert* [CAUSEE] 'I made Albert send John the letter', lit. 'I made send the letter to John by Albert' (example taken from Cannings and Moody 1978: 11).

### 5.3. Distinctive collexeme analysis

The simple collexeme analysis of the previous section was performed separately on the English and the French construction, and the results of each analysis were then compared with each other. In the present section, the two constructions are directly compared with each other through a distinctive collexeme analysis, whose input is the combined set of the non-finite verbs (English verbs and English translations of the French verbs) occurring in at least one of the two constructions, and whose output is a list of collexemes that are distinctive for the English construction or the French construction.

As a general result, it appears that, out of 298 different verbs, 45 are shared by the two causative constructions, which represents a proportion of 15.1%. While this may not seem like a high proportion, it should be noted that the correspondence between the *make* causative construction in speech and in writing, for example, amounts to 14.5%, that is, even less than the correspondence between [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y]. This indicates that the two constructions present some overlap in their $V_{inf}$ slot, not only in terms of semantic fields (cf. Section 5.2), but also in terms of specific verbs.

Table 2 lists the significantly distinctive collexemes in the $V_{inf}$ slot of [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y]. The upper part of the table shows the verbs that are distinctive for the English construction, and the lower part those that are distinctive for the French construction. A first observation is that this time the collostruction strength of

the top collexemes in English is higher than that of the French collexemes; there are also more verbs that are significantly distinctive for the English construction than for the French construction. A second observation is that most of the distinctive collexemes also rank among the top 40 collexemes of the simple collexeme analysis (Table 1, Section 5.2), which suggests that the results of the distinctive collexeme analysis are reliable, despite the necessary step of translation. For English, the distinctive collexeme analysis identifies two verbs that were not listed in Table 1, namely *lie* and *ask*. These two verbs are not very frequent in the data (two occurrences each in [X *MAKE* Y $V_{inf}$]) but they are not uninteresting. When we look at the occurrences of *ask* in context, it turns out that the verb is used as a synonym of *wonder*, another distinctive collexeme (and a simple collexeme) of the English causative construction, cf. (18). As for *lie*, exemplified in (19), it describes a position and thus evokes a lack of movement, which is the opposite of the verbs expressing a change of location which were shown to be typical of the French construction. Next to the addition of these two verbs, we can underline the disappearance of one collexeme, namely the verb *appear*, which came third in the list of simple collexemes of [X *MAKE* Y $V_{inf}$] (see Table 1), but which is not one of the distinctive collexemes of the construction. Instead, it is distinctive for the French construction, which further emphasises the importance of the notion of appearance for [X *FAIRE* $V_{inf}$ Y], an association which is not counterbalanced by the use of *appear* as a perception verb in [X *MAKE* Y $V_{inf}$].

(18) It **makes** one **ask** whether the delicate balance that Almond and Verba pointed to has shifted. (BNC B16 1482)

(19) A suitable Lorentz transformation **makes** the time axis **lie** along AC and then <gap desc=formula> where x is the spatial coordinate of B. (BNC H8K 945)

| **verbs** | **obs. freq. French** | **obs. freq. English** | **coll. strength** | **pref. occur.** |
|---|---|---|---|---|
| seem | 3 | 25 | 20.710226 | English |
| feel | 15 | 21 | 11.112473 | English |
| look | 2 | 10 | 7.789469 | English |
| refer | 0 | 5 | 4.739919 | English |
| vanish | 0 | 5 | 4.739919 | English |
| think | 18 | 10 | 3.215737 | English |
| work | 37 | 14 | 2.958268 | English |
| behave | 0 | 3 | 2.839432 | English |
| conform | 0 | 3 | 2.839432 | English |
| laugh | 0 | 3 | 2.839432 | English |
| sound | 0 | 3 | 2.839432 | English |
| want | 0 | 3 | 2.839432 | English |
| run | 1 | 3 | 2.275596 | English |
| happen | 4 | 4 | 2.105831 | English |
| ask | 0 | 2 | 1.891455 | English |
| fire | 0 | 2 | 1.891455 | English |
| lie | 0 | 2 | 1.891455 | English |
| submit | 0 | 2 | 1.891455 | English |
| wonder | 0 | 2 | 1.891455 | English |

| | | | | |
|---|---|---|---|---|
| meet | 5 | 4 | 1.890642 | English |
| pay | 1 | 2 | 1.448263 | English |
| intervene | 130 | 0 | 7.015989 | French |
| vary | 86 | 0 | 4.591773 | French |
| appear | 375 | 23 | 4.549459 | French |
| emerge | 84 | 0 | 4.482820 | French |
| pass | 83 | 0 | 4.428383 | French |
| stand | 119 | 2 | 4.335553 | French |
| evolve | 56 | 0 | 2.968506 | French |
| correspond | 37 | 0 | 1.952483 | French |
| get | 37 | 0 | 1.952483 | French |
| turn | 37 | 0 | 1.952483 | French |
| understand | 71 | 3 | 1.620947 | French |
| progress | 30 | 0 | 1.580472 | French |
| notice | 41 | 1 | 1.406763 | French |

Table 2. Distinctive collexemes in the $V_{inf}$ slot of [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y] (significant values only)

The other distinctive collexemes (including all the distinctive collexemes of the French causative construction) were also found in the output of the twofold simple collexeme analysis: despite some differences in rank, the verbs that are singled out as significantly distinctive for one of the constructions were also identified as being strongly associated with that construction in the simple collexeme analysis (although not all simple collexemes are also distinctive collexemes). As a consequence, similar semantic fields emerge from the distinctive collexeme analysis, among which verbs of mental processes and perception verbs (especially distinctive for English) and verbs of (dis)appearance and change of state/location (especially distinctive for French). And while the difference between these semantic fields is more marked here (mental processes and perception, for instance, are each limited to one significantly distinctive collexeme in French, viz. *understand/comprendre* and *notice/remarquer*), this is mainly a result of the technique, whose aim is precisely to highlight those lexical items that preferentially occur with one construction over the other.

## 6. Conclusion

Next to a difference in frequency, which results in the *faire* causative construction being almost eight times as frequent as the *make* causative construction in academic writing, the present analysis has uncovered both similarities and differences in the phraseological behaviour of the non-finite verb slot of [X *MAKE* Y $V_{inf}$] and [X *FAIRE* $V_{inf}$ Y]. First, the French collexemes appear to be more strongly associated with the causative construction, but less distinctive of it, than the English collexemes. There are also more classes of verbs that can clearly be identified among the top 40 simple collexemes of the French causative construction, with verbs of (dis)appearance and verbs denoting a change of state or location being strongly associated with [X *FAIRE* $V_{inf}$ Y] but much less so with [X *MAKE* Y $V_{inf}$]. Only a small set of infrequent verbs with the meaning of 'taking upon oneself' is found in English and not in French. On the other hand, non-volitional verbs, including verbs describing mental processes as

well as verbs of perception, regularly occur in both languages, although they are more distinctive for English than for French. The use of translation to provide a comparable basis for the distinctive collexeme analysis, though exploratory, also shows that some direct translation equivalents are shared by the English and French constructions, in a non-negligible proportion of 15%. However, a closer examination of the data reveals that identical or similar verbs are sometimes used differently in the two constructions, cf. the case of *appear/apparaître* or the semantic class of perception verbs. What the above suggests is that there is a partial overlap in the collexemes of the English and French causative constructions and hence in the typical meanings expressed by these constructions. The distinctive meaning that was identified for [X *MAKE* Y $V_{inf}$] in Gilquin (2006a), namely 'to cause a process that is not directly dependent on the CAUSEE', is to a certain extent valid for [X *FAIRE* $V_{inf}$ Y] as well. In addition, however, the French construction can be said to convey the meaning of 'causing a change of state or location (including appearance or disappearance)'. There is therefore clearly no perfect correspondence between the *make* and *faire* causative constructions, which occupy partially overlapping but also partially different portions of the conceptual space of causation. This explains why the mutual translatability between these constructions is relatively low (cf. Gilquin 2008). In a number of cases, a direct translation of the causative construction with its non-finite verb would simply not work in the other language (e.g. the combination of *make* and *want* which, as Cottier (1992: 105) points out, would normally involve the verb *donner (envie)* 'give (desire)' with no causative construction in French).

More generally, this contrastive collostructional analysis has hopefully demonstrated that contrastive linguistics has much to gain from the application of the different techniques of collostructional analysis which, by considering the collexemes of a construction, allow us to get a better grasp of the typical meaning(s) of this construction and thus help us compare it with similar constructions in other languages. We have also seen that direct comparison of two constructions cross-linguistically through translation of the lexical items occurring in a constructional slot is a potentially promising avenue for future research, whose validity and efficiency should however be tested with other constructions. What is certain, at this stage, is that the two linguistic schools referred to by Colson (2008: 195) to investigate phraseology cross-linguistically, namely cognitive linguistics and corpus linguistics, can profitably continue to cross-fertilise each other, both methodologically and theoretically.

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