

Defining Antonymy

by studying co-occurrences in Context

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1. Definitional criteria of antonymy : a corpus-based approach

The term *antonymy*, in a **restricted sense**, is used to designate a binary and opposite relation between **logically contraries or semantically gradable terms** (Lyons 1977). Lexical units (X and Y) are contraries if they cannot be predicate for the same object A at the same time and if this object may be neither X or Y, but the mid-term between them. For example, A cannot be called both *hot* and *cold* however it can be called neither *hot* or *cold*, but *lukewarm* or *tepid*. Lexical units are gradable if they "denote degrees of somevariable property", such as temperature (Cruse 1986: 204, see also Sapir 1944, A. & K. Lehrer 1982).

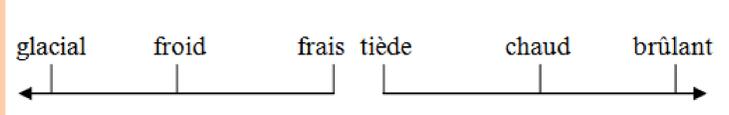
Linguistical definitions of antonymy, like these above, provide criteria to determine which lexical units are antonyms:

- it must exist a paradigmatical relation between these units (Murphy 2003);
- an opposition between all the senses of the units or some of them (for a distinction between "perfect antonyms" and "partial antonyms", see, for example, Ducháček 1965);
- these senses are poles on a gradable scale (see, for example, Ljung 1974);
- to be opposed, the poles must be symmetrical to a mid-term or a middle-area (Katz 1972, Chaffin & Herrmann 1984).

The aim of my PhD project is to confront these criteria with **the daily use of co-occurring antonyms in written modern French**. My hypothesis is that this confrontation will show that these criteria are not totally able to define antonymy in context.

For my purpose, I need a large and recent corpus. So I chose all the articles published in the French newspaper, **Le Monde, from 2002 to 2011**. This choice was motivated by the fact that newspaper corpora are less form-oriented than literary corpora. The risk of finding antonyms used to serve a stylistic effect is minimized. However it's possible to use Frantext to compare the observation from a newspaper corpus to a literary corpus.

3. Case study: the *chaud/froid* scales



Let's examine the last criterion with the help of the corpus: to be opposed, the poles must be symmetrical to a mid-term or a middle-area. The common French example to illustrate this is the opposition between *chaud* and *froid*. They belong to two opposite scales.

On the scale of *froid*, *glacial* (and its synonyms *glacé*, *gelé*) is the upper degree ("plus froid"), *frais* is the lower degree ("peu froid"). On the scale of *chaud*, *brûlant* (and its synonym *bouillant*) is the upper degree ("plus chaud") and *tiède* the lower ("peu chaud") (Berbinschi 2003: 44).

Chaud and *froid* are antonyms, so are *brûlant* and *glacial*, but *chaud* and *glacial* like *brûlant* and *froid* are not, because they are not symmetrical with respect to the middle-area (*frais* and *tiède*) between the two adjoining scales.

« On sentait avoir atteint un lieu abstrait **froid** et **brûlant** comme la glace, où s'élaborait un chant aux flexions impossibles à prévoir, aux intervalles à la fois inévitables et incalculables, et presque mortellement pur. » (Yourcenar M. 1991, *Le labyrinthe du monde*, Paris, Gallimard)

An explanation for this might be that *brûlant* have two senses: "plus chaud, très chaud" and "qui brûle". In French indeed, it's possible to say that very cold and very hot things *brûlent* the skin, for example. The question about the lexicalization of the meaning "très chaud" can be asked.

Is this really a lexicalized sense of *brûlant* or just a restricted and conventional meaning in discourse? First observations seem to give credence to the lexicalization hypothesis. *Brûlant*, when co-occurring with *glacial* tend to have the meaning of "très chaud" but when co-occurring with *froid* tend to have the meaning of "qui brûle". Further research on co-occurrence in corpus *Le Monde* will be able to address that question more precisely.

If *brûlant* is not the good candidate opposite for *glacial*, maybe *bouillant* is. This pair co-occurs, in antonymic context, very often. Because they are not symmetrical, *froid* and *bouillant* are not expected to co-occur in antonymic contexts. However, they sometimes co-occur as can be seen in the example on the right-hand side.

2. Extracting data from the corpus

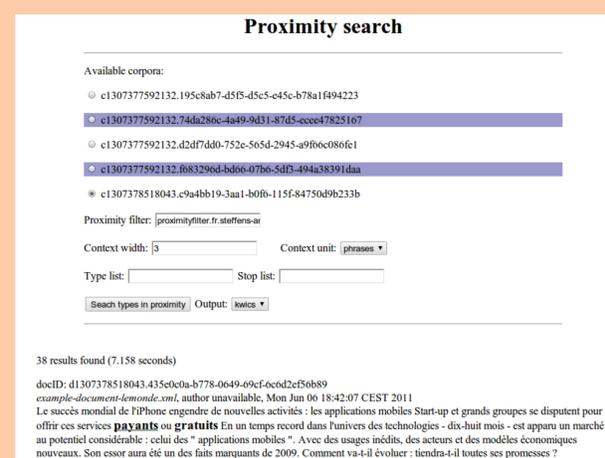
To extract data from the corpus, I shall use the **new software** developed by Cyril Briquet (McMaster University, Hamilton, Canada) under the direction of Stéfán Sinclair. It was designed to enable search of **co-occurrence between keywords taken from a predefined list**.

This list was compiled from the antonymic pairs proposed by the **Grand Robert de la langue française (2001)**. It could be enriched by references in other dictionaries. I chose to define the context of appearance of these antonyms as a **number of sentences** rather than as a number of words. It seems necessary for two reasons.

The first reason is that an antonymic pair, in a newspaper corpus, is often spread over two sentences. The distance calculated by the number of words between two antonyms could only find such pairs by chance. The second reason is that it seems less difficult to determine a priori the number of sentences beyond which two words are no longer co-occurring.

From my initial observations, a satisfactory context could be defined as: considering pair A/B, the context of a co-occurrence is defined as, from the sentence that contains A, the three sentences before and the three sentences after, with B being an element among one of these **7 sentences**. It seems satisfactory for three reasons: 1) it tends to ensure a real semantic co-occurrence between two antonyms, 2) it minimizes as much as possible the risk of not detecting antonymous pairs co-occurring, 3) it can replace the pair A/B in a sufficiently large to understand what it is about.

Below, you can see a print screen of the software interface. It shows the different sub-corpora I chose, the context width panel and one of the results it provides. The type list (list of lemmatized keywords to search in the corpus) and the stop list (list of words which are not considered as keywords) are defined by default following the lists I constructed but any other type list or stop list can be added. I am currently the only user of the software but in the future it may be implemented on the web platform **Voyeur Tools** (<http://hermeneuti.ca/voyeur>).



4. Asymmetrical antonymy on the scales *chaud/froid* : analyse of the corpus data

Consider the pairs *brûlant / glacial* and *brûlant / froid*, the first is symmetrical and supposed to be antonymic, the second is not symmetrical and so is not antonymic. However my first observations show that the second pairs co-occur well, but very often in non-antonymic contexts. See for example the following sentence.

My assumption is that associating connotations to *chaud* and *froid* to qualify human beings is an obstacle to use symmetrical pairs and is the cause of the co-occurring asymmetrical pairs.

Further research on co-occurring antonymic pairs is also necessary to confirm this hypothesis. It will be done very soon.

« Depuis, les gouvernements de gauche post-communiste (traditionnellement plus « pro-russes ») et de droite ont alterné à Varsovie, le **froid** Vladimir Poutine a succédé au **bouillant** Eltsine, mais surtout la Pologne est devenue membre de l'OTAN. » (*Le Monde* 2002)

5. References

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