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Conceptualisation and Evolution of concepts. The example of French Linguist Gustave Guillaume

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Abstract: When Humanities scientists are writers, their theories can be considered as text. Our purpose is to discuss the consequences of this claim, sketching out a methodology based on text semantics and corpora linguistics. In a certain way, we hope to continue European philological tradition. Our analysis is based on a 1,600,000-word corpus made up of conferences, books and articles written by French linguist Gustave Guillaume (1883-1960). After a brief epistemological introduction, the paper will focus on three topics: (i) the correlated evolution of lexicon and conceptual systems during the inception of theory (from philosophical speculation to scientific theory); (ii) linkage between lexicalisation and conceptualisation by means of morphemic variations and lexical creativity (concept of “act” and its derivations) ; (iii) recourse to trope analysis to characterise and define a concept regardless of the scientist’s aim (concept of “mechanism”).

1. Introduction

1.1. In the Humanities, theory is most of the time outlined with texts: papers, books, conference presentations, lectures etc. The scientist is first a reader and a *text producer*. But this imperative textuality is so ordinary that it is almost invisible, and so not problematised. Moreover, theories are generally read as synchronic systems, or even *achronic* systems, depending on their specific purposes (describing one fact, explaining one phenomenon...). Scientists appropriate models and concepts like tools; they have to know their function and how to manipulate them, but they do not care about knowing practical details of their enunciation. Actually, they ignore them, more or less. Moreover, they find such details embarrassing, because they make concept borders fuzzy.

Lexicons, glossaries, and also handbooks, as they extract the concepts from their context, and standardise the definitions, give illusion of stability and tangibility. But concept textuality has necessarily an incidence, not only on interpretation, but also on theorisation. If the scientist is a text producer, then theorisation is the construction of meaning. Theorisation is forced by enunciation, and scientific works, beyond their materiality, can be considered as text.

1.2. The textual aspect of scientific works had been noticed by those in Europe looking at epistemological culture, and especially the French. In this respect, French philosopher Michel Foucault’s works, in the 1960s, must be noted (see for instance Foucault 1969). Actually, he put in place a discourse philological analysis centred on the combination and evolution on specific discursive structures. His purpose is, first, to recognise discursive formations, *i.e.* stabilised relations, regularities between objects, types of enunciation, concepts and themes; then, to recognise breakpoints in idea system history.

Foucault followed famous predecessors' examples, as Georges Bachelard's, Georges Canguilhem's and Martial Gueroult's. Bachelard's notion of *Epistemological break*, or Canguilhem's notion of concept shifts shows, for instance, the history of one concept is not that of its increasing rationality and refinement, but that of the different fields in which they have been designed and validated. As for Martial Gueroult, he is maybe the first to take into consideration textual determination of scientific and philosophical works.

1.3. In a certain way, what we will call *electronic epistemology* is a linguistic approach of this French epistemology. Our purpose is the study of scientific texts using corpus linguistics tools which has been developed for the 30 last years and using also a powerful linguistic methodology: François Rastier's interpretative semantics (see Rastier *et al.* 2002).

With linguistic engineering and interpretative semantics, we have tools and methodology Foucault did not have, among other things because some textual phenomena still are invisible with a classical philological analysis, like, for example, lexicon evolution, which depends on the reader's subjectivity. Concept emergence, concepts' individual and inter-related evolutions, the appropriation of a specific thematic, palinode etc.; all these pieces of information are very useful to understand scientific ideas' genesis, and they can rise from a computer-aided analysis much more easily than from a classical one.

1.4. Our purpose will be to study the development of theory on a defined corpus, of determined authors. Until now, we worked on the writings of French linguist Gustave Guillaume (1883-1960). They are actually typical: built during almost half a century (from 1919 to 1960), they came from a famous author, well-known for his theoretician's qualities all over the world, and among others philosophers like Merleau-Ponty, Deleuze or Ricœur. Furthermore, the writings are very large and almost entirely digitised. Our electronic corpus is close to 1,600,000 words. It is compounded of 2 books (1919 and 1929), 20 papers (from 1933 to 1958), and written and complete texts from 22 years of weekly lessons, *i.e.* about 450 lectures (from 1938 to 1960). We have added to this a hand-written corpus consisting of drafts and dissertations. Thus, it is possible to follow with a high precision the theoretician's train of thought, week after week.

Through this author, we shall study below three conceptualisation phenomena. At first, we'll study the Guillaumian vocabulary's evolution between his 2 first books, that are 10 years apart (section 2), we'll tackle then a fundamental theoretical theme lexicon evolution (section 3), we'll finally analyse a particular theme through the tropes with which it is done (section 4).

2. Text genesis, concept genetics

2.1. From a practical point of view, one of the principal activities of scientists is to devise concepts, to modify them, to order and structure them. Conceptualisation goes with theorisation, and sometimes they are same¹. To be aware of the fundamentally textual nature of concepts leads to think about their expression and the circumstances surrounding their development.

Nowadays, one attaches more and more importance to discourse *hiccups*: autocorrection, slip of the tongue, anacoluthum etc. They were for a long time the victims of an homogeneity

ideology (especially with the North-American generative theories). But now, these phenomena appear to be constituents of text, not only clues of the meaning construction, but even *partners of this construction*.

As Bachelard said, in *La formation de l'esprit scientifique*, scientific concept is a clustering of “successive approximations” (Bachelard 1938: 61). Hesitations, renunciation, direction change, palinodes, all these *hiccups* of theorisation cannot be ignored, because they take part dynamically in conceptualisation and theorisation. Thus, discourse discontinuities have equivalents in the sometimes chaotic conditions of theoretical concept emergence.

2.2. Statistical analysis, called *lexicon connection*, which can be done on forms or on form occurrences, informs us on the breakdown of vocabulary in texts which make up the corpus. One can thus compare, in a macroscopic way, a set of texts. If 2 texts have a high number of common forms, one will say the lexicon connection is big, or on the contrary, that lexicon distance is small. Form dictionary analysis in Guillaume's corpus shows a diachronic organisation. In other words, overall lexicon evolution seems to be continuous, without major discrepancy². However, one observes a very important distance between the first book, *Le problème de l'article*, written in 1917 (and published in 1919, henceforth *PBA*) and its closest neighbours, more particularly *Temps et verbe (TV)*, published in 1929 and the first lectures read in 1938.

Perhaps distance is the clue of a major revision of the author's idiolectal dictionary. Statistical lexicon methods allow to study the decreasing and increasing forms from one text to another. And yet it appears the lexicon structure is completely changed between the 2 first texts. First, Guillaume gives up philosophical concepts to promote scientific ones. Then, the change has unexpected consequences on structure and qualification marks of these concepts.

2.3. Among increasing forms, one can observe 5 semantic categories:

(i) meta-linguistic vocabulary strongly increases. It is structured into 2 distinct lexicons: first, traditional meta-language (*temps, aspect, mode, présent, passé, futur, aoriste, optatif* etc.), then, idiolectal meta-language (*chronogénèse, chronogénétique, chronothétique, chronotypes, aspect tensif, détensif* etc.).

(ii) the vocabulary is sustained with a theoretical lexicon which is organised around two morphological derivation patterns:

- ‘constru’- (*construire, construction*) and ‘systēm’- (*système, systématique*) which show that Guillaume wants to structure and set up concepts together in a new way;

- ‘représent’- (*représenter, représentation*) and schēm’- (*schéma, schématisation*) which mean that Guillaume tries to show explicitly and concretely the phenomena he studies. This willingness to show, to represent and to schematise also appears when he frequently uses charts, indicated by the increasing use of the lexical item (“lexie”) *figure*³.

¹ Sometimes a single concept becomes a theory.

² One will notice an amazing tendency of early and later texts to be close. In other words, it seems that Guillaume, in his earlier period, used vocabulary he had given up earlier. We will show examples of this U-turn below (see section 3.3 and 4.1)

³ Henceforth, we propose to adopt the French linguistic term *lexie* which is a stable set of morphemes, constituting a functional unit (see Rastier et al. 2002).

(iii) Among structure items, one sees a lexical field we could relate to spatial patterns: *situer* [“to locate”], *opposer* [“to oppose”], *différer* [“to differ”], *comprendre* [“to include”] etc. This vocabulary links the two theoretical lexicon sets seen above.

(iv) Forms used as reference-related lexicon are on the increase as well. For instance: *nous nommerons* [“we’ll name”], *identité* [“identity”], *propre* [“own”], *proprement dit* [“strictly speaking”].

(v) Finally, Guillaume seems to introduce a critical dimension. He fits his works into linguistics history (using expression like: *linguistique savante, historique, traditionnelle descriptive* [“descriptive, traditional, historical, scholarly linguistics”]).

2.4. Let’s study now the decreasing forms in *TV*; that is forms existing in *PBA* which will be given up 10 years later.

(i) The most important remark we can make concerns the substantial fall in philosophical vocabulary:

- verb: *exister* [“to be”, “to exist”],

- nouns: *esprit* [“mind”], *raisonnement* [“reasoning”], *intelligent*, *êtres* [“beings”], *idéauté* [“ideality”], *idée* [“idea”], *matière* [“matter”], *objet* [“object”], *vue* [“view”], *fin* [“purpose”], *progrès* [“progress”], *force*, *causes*, *loi* [“law”];

- adjectives: *générale* [“general”], *pure*, *formelle* [“formal”], *logique* [“logical”].

In comparison, meta-language vocabulary doesn’t seem to decrease. Only traditional grammar terms as *article* or *nom* which are specific to the *PBA* problematic decrease. It doesn’t mean that Guillaume gives up all the first book’s meta-language: meta-language increases at the expense of non linguistic concepts, *i.e.* non scientific concepts.

(ii) May we also add that evaluation and qualifying lexies decrease too: *plusieurs* [“several”], *guère* [“hardly”], *très* [“very”], *trop* [“too much”], *peu* [“few”], *assez* [“enough”], *tout* [“all”], *souvent* [“often”], *sortes de* [“kind of”], *diverses* [“various”], *véritable* [“real”], *forte* [“strong”], *facile* [“easy”], *petit* [“small”] etc.

(iii) Lastly, let’s notice the decrease in the use of modal verbs *falloir* (*il faut, il ne faut pas*, [“it must”, it mustn’t’]) and impersonal pronominal verb *s’agir* (*il s’agit, il ne s’agit pas, il ne s’agit plus*) which indicate and point what is about. These two verbs’ decrease may show Guillaume’s abandonment of hypothetical or teleological stance.

To sum up, in *PBA* one has data, but very few tool concepts to analyse them, and the lack is offset with philosophical notions (*esprit, idée, loi* etc.) qualified with modal verbs and evaluation lexies (*sorte de, presque, peu*, etc.). In *TV*, one has a wealth of tool concepts and very specific meta-concepts (thus one avoids evaluations). Tool concepts and meta-concepts are organised into a hierarchy, they form a system, and this system is, strictly speaking, a *theory*, in an etymological meaning which is “shown”, or even “performed by mind”. That’s why charts and spatial location lexicon are required.

Moreover, *esprit* [“mind”] is the largest decrease between *PBA* and *TV*. The number of occurrences of *esprit* in *PBA* is 337, that is 1/6th of occurrences in the whole published corpus to date, which is made up of more than 20 books. Finally, one notices the ‘constru’- lexeme, which is the largest increase between *PBA* and *TV*, is also the largest increase in the whole

corpus, from 1919 to 1960⁴. It shows the crucial aspect of what has been done between the two books:; Guillaume gives up a philosophical approach of language in favour of a more rigorous, theoretical and scientific attitude.

2.5. For, us; Guillaume's palinode is typical of the hiatus existing between philosophy and science. At the same time, French writer Paul Valéry said something which wonderfully sums up Guillaume's realisation:

La philosophie développe cette croyance qu'il y a, dans la profondeur que nous supposons au sens de certains mots, des choses, des objets qui pour être indéfinissables n'en ont pas moins une existence *réelle*. Et ces mots-là précisément font partie de cette croyance. Ainsi infini, parfait, temps, cause, âme et matière etc. sont *idoles philosophiques* — et non considérées [pour] ce qu'ils sont [c'est-à-dire] des instruments défectueux, *désastreux en combinaison*⁵

To our mind, Guillaume, between *PBA* and *TV*, freed himself from these *croyance* and from these *idoles philosophiques*, because they were inappropriate to describe language, and impossible to combine with each other.

3. Theme lexicalisation

3.1. To determine concepts, philosophical tradition gives pre-eminence to lexicon, and more particularly to noun phrases. And yet, Saussure asserted that the psychic side of sign, *i.e.* "signified", doesn't coincide with concept. Therefore, a concept is not systematically linked to a specific sign. It can be actualised in *theme*, that is a set of semantic units which aren't necessarily lexicalised. In other words, a concept is not bound to match lexie.

A theme lexicalisation, which leads to form a concept, mustn't be thought exclusively as its start, not even as achievement of conceptualisation. It appears to be a state linked to a particular time.

Before lexicalisation, concept can exist textually, in a more or less tenuous manner, in a state of theme(s) in the process of structuring. It is then semantically unstable and textually complex. It is embedded in a complex net of expressions and phraseologies. More, a theme can be divided in several sub-themes, which can coexist in same context or specialise according to different issues.

Several genetically distinct themes can merge, become muddled, group together, to eventually separate. They can also coexist for a long time, without mixing up, while sometimes sharing a few semes.

Themes and sub-themes can give rise to several lexicalisations: during the same time, that is in the same context, or at different times. Themes (and sub-themes) can also never be

⁴ One counts 3,254 occurrences, with 40 forms and 12 lexies: *construire, reconstruire, construction, reconstruction, constructivité, construit, préconstruit, inconstruit, constructeur, constructif, reconstructif, constructivement* (all lemmatised).

⁵ Paul Valéry, 1924, *δέλτα*, X, 237, quoted from *Cahiers*, Bibliothèque de la Pléiade, Gallimard, vol. II, 597. We slightly modified text for a better understanding. "Philosophy develops the belief there exist in the supposed depth of certain words, things, objects, which are undefinable but real. And those words are precisely part of this belief. Thus, 'infinity', 'perfection', 'time', 'cause', 'soul', 'matter', etc. are *philosophical idols* — and not considered as they are: faulty instruments, *disastrous when combined*".

lexicalised (or lexicalised *a posteriori*, by other authors⁶. Anyway, lexicalisation doesn't mean concept is defined.

3.2. *Actualisation*, i.e. the way linguistic item goes from language to discourse, is sometimes considered as Guillaume's emblematic concept. Though, the lexie is statically very infrequent in the corpus. One counts less than 40 occurrences. In fact, the concept of *actualisation* had several aspects, which did not correspond to the same reality.

In 1919 (*PBA*), *actualisation* does not exist namely. But a complex theme built around substantives *actuel* ["actual"] and *inactuel* ["inactual"] dominates. The theme is aided by adjective or noun suffixes which mean states and not process (e.g. *actuelle*, *inactuelle*, *actualité*; *inactualité* etc.). Form *inactuel* is in competition with form *virtuel* ["virtual"]. Only morpheme 'virtu'- feeds a process lexie: *virtualiser* (["to virtualise"], 3 occurrences).

A similar conceptual couple is also present, achieved with *puissance* ["powerful"] vs. *effet* ["effect"] and 'potent'- vs. 'effect'- (e.g. *potentielles*, *effectives*). But no form means process (like *potentialiser*, for instance).

Actualisation doesn't come suddenly, but progressively, during *TV*. In Chapter 3, one has form *actualisantes* (["actualising"], 2 occurrences); in Chapter 4, *actualisable* (2 occurrences); and, in chapter 5, 8 different forms: two of which are past participle *actualisés* and eventually noun *actualisation*. Noun first appears with prefixed (*sur-actualisation*). Then, process morpheme '-is-' is added to lexeme 'potent'- (*potentialiser*). But process lexeme 'virtualis'-, invented 10 years before, remains marginal (3 occurrences).

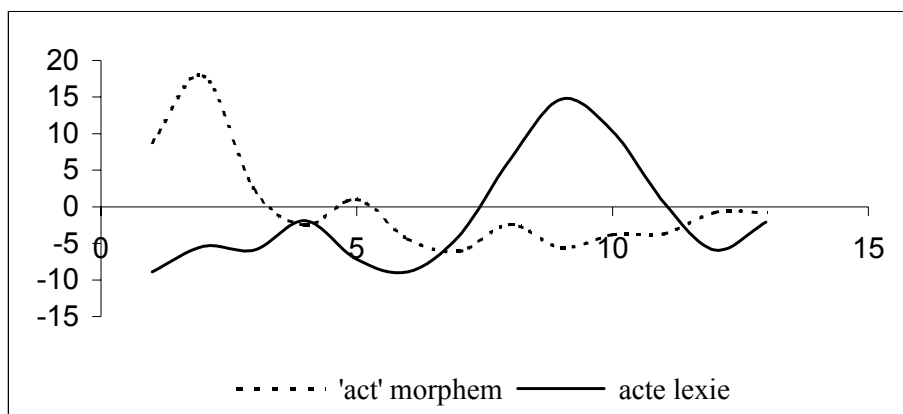
During the 30's, *actualisation* frequency falls drastically, and both associated sub-themes⁷ gradually decrease and become very rare. Concerning conceptual couple 'potent'- vs. 'effect'-, it leaves purely and simply from Guillaume's meta-language.

On the other hand, morpheme 'effect'- is reused in couple *puissance* vs. *effet* which is more and more frequent, while first themes are abandoned. *Puissance* vs. *effet* are used in lexies like *unité de puissance* ["power unit"], *unité d'effet* ["effect unit"]. They go with a new theme structured around unifying concept *acte*. Lexies are then compounded: *acte de langage* ["speech act"], *acte de discours* ["discourse act"], *acte de représentation* ["representation act"].

Charts below shows how the morpheme 'act'-, which is used in 30 different ways, decreases while lexie *acte de x* increases.

⁶ A lexicalised concept can more easily be manipulated (relation with other concepts, migration to other issues or other thematics etc.).

⁷ That is the first sub-theme, without process ('act'- vs. 'inact'-/'virt'-); and the last sub-theme, with lexicalised process (*actualiser*).



It is funny to see that Guillaume gives up, at first, philosophical rhetoric in favour of a scientific conceptual pattern, but then he turns away some famous philosophical concepts (*puissance* and *acte*) to use them as part of compounded lexies (*unité de puissance*, *acte d'expression*) and to integrate them in his scientific discourse.

3.3. Why does Guillaume give up morpheme 'act(u)'? and above all its combination *actualis-* while it's going to become very famous in linguistics? Several ways can explain it. The first one, which is more human than theoretical, involves expanding corpus. In 1922, Swiss linguist Charles Bally used for the first time *actualisation* to mean a very similar idea to the one described but untitled by Guillaume a while before. Linguists acknowledged Bally to be the inventor of the *word*. But *word* refers to *concept*, and then, concept authorship was granted to Bally, even if Guillaume was using it as theme before. That's why Guillaume avoids talking about actualisation after 1929, except for claiming credit for the invention!

The other explanation is more theoretical. It's about the will of Guillaume to improve description of mechanisms that today we would call *cognitive mechanisms*. They are relation between thought and language. To Guillaume's mind, the first theme opposing *actuel* and *inactuel* should seem to be inadequate, because it wasn't enough constrained, or too hazy. Before its actualisation, language couldn't really be distinguished from thought. In the 40's, Guillaume places, between thought and language, an insurmountable ontological step. Language can't be thought. Moreover, it can't be considered as actualisation of thought (for more details, see Valette 2001).

In conclusion, one can observe that Guillaume, when he gives his very last lectures, reuses themes he had abandoned since his first book⁸: theme *potentiel* vs. *effectif* is replaced by theme *puissanciel* vs. *effectif*. And in a stunning way, a few weeks before he dies, Guillaume invents a new concept, *effection*, that some people have assimilated to actualisation. This late lexie might be a revenge on the omnipresent *actualisation*.

4. Textual construction of concept: the example of *mechanism*

4.1. Concept never boils down, far from it, to one or several definitions or even to a set of glosses, added examples or not. Concept depends of its realisation in text. Each one modifies

⁸ It's a strong trend which isn't restricted to the theme talk about here.

its nature in such a way that autonomy is only a particular case⁹. If two concepts are linked only one time, then the link is part of the concept's nature, even though the link is not defining strictly speaking.

To illustrate our claim, I'll focus on the theme of *mechanics*, firstly because it is a complex theme, in the area between philosophy, science and technology, and, consequently, it can be part of various conceptual constructions; lastly because it is a very important concept in Guillaume's theory. But as it is complex, it hasn't been very stable in the way Guillaume used it, and it gave rise to several senses which were sometimes contradictory.

What is mechanical?

- (i) what concerns machines, or is explained by means of machines, or by analogy to man-made machines (mechanical explanation)
- (ii) what concerns a representation, or what supplies a concrete and intuitive explanation, like that which gives the knowledge of a mechanism (mechanical explanation),
- (iii) what excludes any occult power, any inner or immanent purpose, any notion of force¹⁰.

Guillaume uses almost all these senses of *mechanical*. In *PBA*, his 1919 book, which is written with a philosophical tone, metaphysical concepts are very often used. "Mechanical" explanation is mentioned many times, but it competes with "intelligent" explanation which includes a teleological meaning incompatible with the third sense of mechanical. After that, Guillaume will try to exclude this "intelligent" explanation. Besides, let me take the example of *force*, opposite to mechanism. In section 2.4, we saw it decreases sharply. One observes indeed several anti mechanism lexies: *force occulte*, *force aveugle*, *force sans but ni finalité*, *force conservatrice*, *force vitale*, *force d'innovation*, *force novatrice*, *force de l'élan initial*, *force de résistance*, *force expressive*, *force agissante* etc.¹¹.

In short; to study *mechanic* in Guillaume's writings is to measure the evolution from philosophy to science, and even technology.

4.2. Cybernetics is quite rightly considered as the ancestor of cognitive science and, more generally, as the first effort to let thought become a science object. Guillaume, as inventor of a theory of mind, was necessarily sensible to cybernetics. The positive traces of his interest are an easily identifiable corpus: 2 paragraphs in two lectures told in 1955 and a set of texts in different genres (essay, report, lecture) written during the 1956 spring.

1956 corpus analysis shows a very precise idea of what Guillaume thinks about cybernetics. Concerning favourable remarks, Guillaume seems to subsume his theory and cybernetics to a similar project: understanding the mechanism of thought. For him, the linguistic purpose of cybernetics is to isolate mechanisms used by language activity, *i.e.* to extract formal and mechanical parts of language from the human being (as material substratum) which force him to obey. Guillaume hastens to say the project is unrealistic, for phenomenological reasons: in a few words, he claims language exists only if it is located, embodied, and it cannot be

⁹ Besides, this case can be suspect: definition can tell what you would like the concept to be, and not what it really is when it is used. Moreover, quality of definition (accuracy, comprehensiveness) doesn't mean theoretical interest

¹⁰ Based on *Vocabulaire technique et critique de la philosophie*, Lalande, PUF, 1962.

installed in a non body machine. But analysing some textual elements, one can think that Guillaume's positions were and still are much more moderate and subtle. In sections 4.3 and 4.4, we will study 2 textual phenomena, the first lexical, the second trope rhetorical. Both bring new information about the way Guillaume deals with the language embodiment.

4.3. In a 1956 conference, Guillaume called cybernetic mechanism *endo-mécanisme du langage* ("endo-mechanism of language") and assured many times it is an attested synonym for cybernetics. But endo-mechanism is not part of cybernetics terminology¹². Though, one notices 17 occurrences of *endo-mécanisme* in the sub-corpus. It can't be a *lapsus calami*; and although Guillaume perhaps mistakes with the quite similar *servomechanism*, the use of prefix *endo-* is extremely interesting.

Both elements forming the lexie *endo-mécanisme* are parts of Guillaume's idiolectal dictionary. One counts more than 1,500 occurrences of lexeme 'meca(n)'*- (mécanique, mécanisme)*. It is used to construct the key-concept *psychomécanisme* ([“psychomechanism”], *i.e.* mechanism of thought concerning language) which will be chosen by Guillaume's heirs to name the theory (*psychomécanique du langage*).

Prefix *endo-* is also part of Guillaume's morphemic dictionary. One counts about 10 lexies using it (*endo-sémantique, endo-statique, endo-morphologique, endo-systématique, endo-chronogénétique, endo-phrastique, endo-synthèse, endo-psychique, endo-génèse* etc.) and about 200 occurrences in the whole corpus¹³.

Prefix *endo-* is attested since 1938. It is contemporary of prefix *psycho-*. It's also in 1938 that appeared for the first time *psycho-systématique*, which is the name Guillaume chooses for his theory. *Psychomécanisme*, chosen by heirs, appears in 1945. A few months later (January 1946), one comes across a first occurrence of *endo-systématique*. The second one will appear in 1957, just after the conference devoted to cybernetic *endo-mécanisme*.

Thus, it seems that morphemes *endo-* and *psycho-* are used in very similar constructions, - not to say interchangeable. Moreover, 6 months before he presents cybernetics with the wrong name *endo-mécanisme*, Guillaume writes: “Dans ‘psychosystématique’, il y a psychisme et système. ‘Psychisme’ emporte avec soi l'idée essentielle et cinétique d'intériorité. Le psychisme (humain), c'est le dedans de l'homme pensant.” (Guillaume [12, 1st 1955], leaf 2, unpublished)¹⁴. Finally, the two morphemes have the same seme /inside/. It is inherent in *endo-* and afferent in *psycho-*.¹⁵

One is surprised by the morphological similitude between key concept *psychomécanisme* and pseudo-cybernetics concept *endo-mécanisme*. The first could be the etymon of the second. For us, this is a typical example of textual construction of concept. Term *psychomécanique*, forced by its realisations in the text, is here enriched with a cybernetic sense. This sense is extraordinary because, first, the cooccurrent realised lexie is a hapax (in textual construction

¹¹ That is “*occult force*”, “*blind force*”, “*purposeless force*”, “*conservation force*”, “*vital force*”, “*innovation force*”, “*novation force*”, “*initial momentum force*”, “*expressive force*”, “*acting force*” etc. At one stage, before he died, Guillaume talked about the *forces vives du langage*.

¹² As historian of cognitive science Jean-Pierre Dupuy told us.

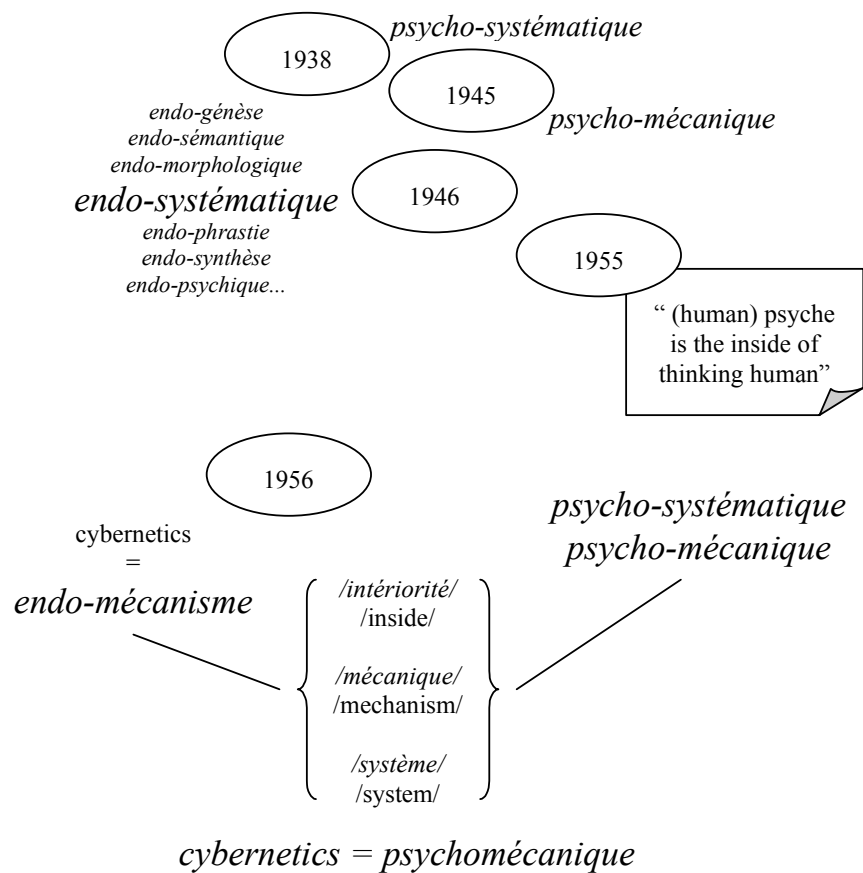
¹³ Concerning the inside morpheme 'intéri', we counted almost 1,000 occurrences. , *intérieur(e)*, *intérieurement*, and *interne* are part of the peculiarities of Guillaume's style, compared to the TLF dictionary.

¹⁴ In short: “The (human) psyche is the inside of thinking man”.

¹⁵ See Rastier et al. 2002 for conceptual system.

of concept, rarity is value), second, it is an idiolectal word. In brief, in this text, psychomechanics *is* cybernetics.

The synoptic table below shows this convergence:



4.4. the continuation of our investigation in Guillaume’s text bring up the question of tropes, which are far from being absent in scientific discourse. Metaphor is particularly used. Let’s study below some aspects of the rhetoric of Guillaume’s scientific discourse.

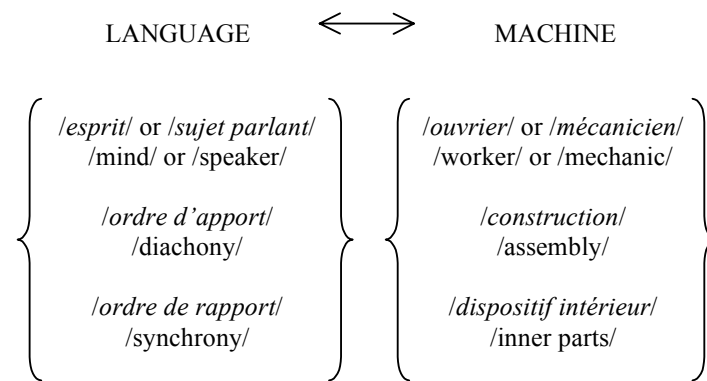
Guillaume is used to opposing language as mechanical and determined, and mind, as free and undetermined. *Mechanics* comes from Greek *mekhane* “machine”. As we saw above, what is mechanical is explained by means of machines, or by analogy to man-made machines, and mechanical explanation is an avatar of the analogy. Guillaume uses frequently mechanical explanations, and he compared language to machine in but very few significant occasions. 4 times he draws the comparison, and twice he takes care to moderate the strength of the comparison. For us, this caution is an antiphrasis: rather than weaken the comparison, it emphasises its interest.

In the first comparison, dated 1946, Guillaume opposes the order with which the component parts of the machine run and the order with which the worker built the machine; this to explain that synchronic order is not diachronic order. In the second one, dated 1947, he compares the relation between the speaker and the mechanic who drives his machine ignoring its architecture and its working:

La construction achevée d’un système repose sur un certain ordre dans le rapport des parties constitutives . Elle n’a rien à voir avec l’ordre dans lequel les parties rapportées

ont été apportées à l'ouvrier – qui est ici l'esprit afin qu'il en construise [...]. *J'évite autant que possible, parlant des choses de la langue, qui ont une rigoureuse spécificité, de faire appel à des comparaisons.* Pour une fois cependant, je crois pouvoir, sans dommage appréciable, montrer exceptionnellement un peu moins de scrupule. Je dirai donc que l'ordre de rapport — l'ordre systématique — est dans une machine celui qui en assure le fonctionnement, celui sans lequel la machine ne marcherait pas. Il emporte avec lui une juste mise en place des pièces constitutives. Quant à l'ordre d'apport — l'ordre historique — il est celui, en général assez inconditionné, qu'on a suivi pour le montage des pièces [...]. *Je veux me persuader que cette comparaison n'a pas d'inconvénients cachés* (Guillaume [5, 17 1946c] 1985: 196-197)¹⁶

La situation du sujet parlant est, en l'espèce – *j'ai peu de goût pour les comparaisons, généralement fausses sans qu'on s'en aperçoive bien à première vue* – la situation est à peu près celle du mécanicien qui sait conduire une machine, mais qui peut n'avoir qu'une idée tout à fait vague du dispositif intérieur de la machine qu'il conduit et une idée encore plus vague des problèmes de toute sorte mis en cause par et pour sa construction. La difficulté, qui est grande, de s'introduire à la connaissance de la langue et de sa systématisation propre n'empêche nullement que cette connaissance soit indispensable à qui veut avoir une connaissance véritable de ce qu'est le langage. (Guillaume [12, 28 1947c] 1988: 11)¹⁷



The methodology of scientific texts' semantic analysis we have tried to explain, lets us consider bivalence as a positive element of conceptualisation phenomenon, and not as a vacuity clue. Guillaume's warning reinforces the link between both comparisons and invites

¹⁶ "The completed development of a system is based on some sort of order of its constituent parts. It is unrelated to the order in which the constituent parts have been brought to the worker –who stands here for the mind [...]. *When it comes to analysing language, which is rigorously specific, I try to avoid using comparisons.* For once, however, I feel I can be a little less unscrupulous without doing too much damage. I would therefore argue that the synchronic order –the system's order– is what allows the machine to run, the pre-requisite to making the machine work. It involves a fair implementation of the component parts. As for the diachronic order –the historical order–, it is the usually relatively independent order one has followed to assemble components [...]. *I want to convince myself that such a comparison does not hold any hidden flaws.*"

¹⁷ "The situation of the speaker is –*although I don't like comparisons, which are usually flawed without anyone realising it at first*– a bit like that of a mechanic who knows how to operate a machine but has only a vague idea of the inner parts of the machine he uses and an even vaguer idea of the varied issues involved in its assembly. The great difficulty of getting to know language and the system upon which it is based does not rule out the fact that such knowledge is vital if one wants genuinely to know what is language"

us to compare topics actors. One can say briefly that this double comparison is part of a complex motif where enunciation (the mechanic) and cognition (the worker) are the same thing. Thus, one can understand the argument of language embodiment Guillaume claims to criticise cybernetics (see section 4.2). However, Guillaume will never express explicitly this equivalence. It's an absolutely rhetorical hesitation, written in 1958, which is the closest formulation we found:

Le langage est dans l'homme pensant, dans la pensée humaine, un ouvrage par elle construit, qui lui sert — c'en est le finalisme principal — à reconnaître en elle-même où elle en est de sa propre construction (Guillaume [12, 4 1958] 1995: 13)¹⁸

Let's note that during the conference, Guillaume alludes, for the last time, to the cybernetic machine. Thus, it appears the nagging question of language embodiment is for the first time linked to a machine topic, by means of an "exceptionally not so bad" comparison, but it is finally mixed up with the cybernetic machine topic, which is not comparison but real scientific modelling.

4.4. Comparisons seen above and other meditations on machines, except cybernetics one, are *metaphoric*, i.e. its descriptive value is nil. They are only evocative. The main mechanical metaphor we can observe in Guillaume's writings is the famous clockwork, the epitome of every artificial mechanism¹⁹. Because it is very commonplace, it has no incidence on theory. But the clockwork metaphor has a representative value. It contains a specific seme in Guillaume's talk, and this seme can propagate and feed a comparison, for instance.

Let's see a thought about artefact, a priori without linked to language:

Nous n'avons pas encore bien vu que le naturel passe l'industriel, comme l'épervier passe l'avion ; il est des milliers de fois moins potentiel, mais il est vivant. Quelle mécanique grossière que l'autre, [comparé] au prix de cet organisme qui a rouage et circulation jusqu'en ses infinies molécules, qui s'est construit lui-même et se répare lui-même. Cela devrait crever les yeux comme une évidence : la chose vivante, qui est née, qui s'est bâtie du dedans, cellule par cellule, est infiniment plus perfectionnée que la chose fabriquée du dehors. La *merveille*, ce n'est pas l'avion, c'est l'oiseau. (Guillaume, draft)²⁰

Let's make it clear this text is not part of our electronic corpus. Its epistemological status is problematic because it is extracted from Guillaume's draft. Drafts are writing and

¹⁸ "Language is, in thinking human, in human thought, a piece of work it constructs, which is used –here is its main purpose– to know in itself what stage of its own construction it is".

¹⁹ See, for instance Guillaume [3, 14 1957] 1982:155, 164.

²⁰ "We haven't noticed yet natural is better than manufactured, as sparrowhawk is better than plane ; it is thousands of times less potential, but it is alive. What a crude mechanism the other is, [compared] with the value of this being which has cogs and circulation down to its countless molecules, which builds and repairs itself. It's blindingly obvious: the live thing, which is born, which builds itself from the inside, cell after cell, is infinitely more advanced than the manufactured thing from the outside. The *wonder* is not the plane but the bird".

conceptualisation workshops. They don't only deal with language. In the present case, language is absent, textually speaking.

But we draw the reader's attention to the use of substantive *merveille* ["wonder"], at the end of paragraph. 'Merveill'- is not a common word. In Guillaume's idiolect, the lexeme includes a feature /linguistics/ absent of its ordinary meaning. Thus, thanks to the lexie, the text is about linguistics. Let's see in which terms.

Guillaume usually uses lexeme 'merveill'- realised in adjective *merveilleuse* ['wonderful'], alluding to a frequently quoted Meillet thought: "chaque langue forme un système où tout se tient, et a un plan général d'une merveilleuse rigueur" (Meillet [1903] 1964: 463)²¹. And yet, the clockwork metaphor is also linked to Meillet's name (as it is a lexie). Several times Guillaume happens to quote his mentor's comments about him: "Vous faites de l'horlogerie – une horlogerie que vous aurez de la peine à faire voir aux linguistes" (Meillet, quoted by Guillaume [3, 14 1957] 1982: 155)²².

Thus, lexie *language*, when it collocates lexie *Meillet*, consists of 3 semantic features /wonder/, /clockwork/ and /system/:

Meillet collocation with

LANGUAGE

$$\left\{ \begin{array}{l} /merveill/ \\ /wonder/ \\ \\ /horloge/ \\ /clockwork/ \\ \\ /système/ \\ /system/ \end{array} \right\}$$

It means lexeme 'merveill'-, in this text, conjures up the clockwork metaphor applied to language. But as there are two concrete entities, one supposes Guillaume interprets metaphor literally. A qualitative step is taken. The clockwork metaphor is indeed harmless, firstly because it keeps the ideal feature of language (language is abstract, a clock is concrete), lastly because anyway, except in special cases, language doesn't give the time, no more than a clock speaks! But a plane is as concrete as a bird, and above all, they have the same function: if its mechanics is crude, its purpose, to fly, is identical to a bird's one (in this case). Eventually, the theme *industriel* vs. *naturel* built with the matched features /concrete/ and /fly/ is propagated to language, via 'merveill'-. And yet, they are two characteristic features of scientific modelling as it takes place during the 20th century, thanks to cybernetics.

To conclude, one can say that the concept *language as manufactured mechanics* (vs. *language as natural mechanics*) is not lexicalised, but *it textually exists*, even if it isn't the wonder we could expect.

5. Conclusion

Applied to scientific text, semantic analysis shows how theories aren't constructed with ideas, notions, and concepts, but as a mix between linguistic creativity and highly constrained

²¹ "Each language is a system where everything is connected and has a wonderfully rigorous plan".

²² "You are a clockwork designer – which clockwork you won't easily show to linguists".

rhetoric. One can see how major conceptual themes, like equivalence between *thinking human* and *human thought* in Guillaume's works, can never be explicitly written but nevertheless exist with several textual forms (e.g. rhetoric palinode, comparison etc.) linked with other themes (e.g. machine).

Issues of our methodology in progress are many. They are linked to the epistemological specificity of corpus linguistics. The question of the border of the corpus, for example, which was raised after our lecture at the KIAP conference, appears to be crucial. By way of conclusion, we will answer now our interlocutor.

Our claim is text is a priori self-sufficient, and one needn't call other scientific productions to explain data. One could retort that we turned to Bally, Meillet and cybernetics in our exposé. Admittedly, nevertheless extra-elements were in fact present in the corpus (quotation of Meillet, criticism against Bally, even description of cybernetics). Even if we well know Guillaume, his intellectual environment, his readings etc., we think the refocusing on text, that is the real and tangible object of linguistics, is absolutely necessary to rank it to the level of science. Historical or sociological context can weaken linguistic analyses. Eventually, we prefer a poor but fair study on a few semantic elements, as those we talked about here, rather than a pan-scientific wandering.

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