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## “ Overview on metaphors about biotechnology and law”

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# I-BioLex: 2nd Project Meeting with SAG on 21st & 22nd March 2023 in Aix-en-Provence

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**Task 1: Overview of metaphor work**



- There are many metaphorical forms in law, ranging from simple catachresis to analogies and conceptual metaphors.
- Metaphors are cognitive instruments that influence representations. They are particularly used as an instrument of explanation and persuasion to facilitate the social and cultural integration of innovative technologies. This is the case for very sophisticated and complex socio-technical processes and devices, for orders of magnitude beyond the ordinary capacities of representation, for example financial policies or digital technologies.
- The issue of biotechnologies has given rise to numerous metaphorical formulas in scientific texts and media ("construction game", "photocopy", "clones", "Pandora's box", "Frankenstein's monsters", etc.).

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- Biotechnologies and their technical or pictorial lexicons are in turn used to describe other practices and sectors of activity because of their aspects relating to representations and the imaginary (for example in economics).
  - Biotechnologies, by the reactions they arouse between enthusiasm and fear, are the object of political and philosophical controversies mobilising formulas of a metaphorical type, sometimes identical, sometimes not, sometimes very classic (of an organicist or animalist type), sometimes in the form of neologisms (in particular in the Anglo-Saxon formulas), notably by the rapid production of new techniques.
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- What is the role of metaphors in the production of biotechnology law?
- I studied a corpus of "hard" law texts in European Union law relating to biomedical innovations that Aurélie suggested to me (blood, tissues and cells, GMOs, micro-GMOs, medical devices, in vitro diagnostic medical devices, advanced therapy medicinal products, orphan drugs, medicinal products, health technology assessment, patentability of biotechnological inventions, personal data).
- I was able to see that, with the exception of the opening considerations of these documents, the very form of these directives was resistant to interpretation, in particular because of a vocabulary corseted by definitions written in a formatted language.







- After noting the difficulties in analysing this corpus of 'pure law' using classical qualitative methods of textual analysis and the constitution of semantic fields, I contacted several colleagues specialised in the quantitative study of textual corpora who are accompanying me to 'crack' this enigma:
- Jérôme Valluy (MCF HDR SIC, Paris Sorbonne)
- Guillaume Simiand (Associate Professor of Literature, Paris Sorbonne)
- Sébastien Macagno (Developer at DATA-OBSERVER Marseille)
  
- Their approaches to the test corpus proposed by Aurélie are different, even divergent.



- I have studied the corpus and the main result of my observation is that the method of analysis by metaphors cannot be applied to a very large part of the said corpus, in particular to texts of "pure" (or "hard") law, which are very different, from the point of view of this method, from the texts of legal doctrine (analyses and commentaries of legal regimes and/or judicial decisions in law review articles) and from the texts of judicial decisions (which may form jurisprudence according to the definition given to the latter).

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- The preliminary study of the corpus of texts reveals that this method of analysis by metaphors requires 1) the identification of an 'objective author', either individual or collective (if several authors sign a doctrinal article or if several judges participate in the drafting of a decision, they will be considered as a single author) and 2) who has a certain latitude in the choice of words and/or expressions used (which is the case in doctrinal texts and in the 'recitals' of judicial decisions). The two conditions are therefore met for the texts of doctrine and legal decisions.
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- On the other hand, in the case of "pure law" texts, the drafting of the text does not depend on an author, whether individual or collective, but on a legal procedure on the one hand and on a political situation on the other, which together form a complex process to be studied in the framework of a classical sociology (field survey, interviews, etc.), as well as a "legislative sociology". Moreover, in "pure law" the lexical choices are constrained by the law itself.

- On the first condition: it is difficult to impute a choice of words or a linguistic habit or an ideological tendency reflected in the choice of words as long as one or more authors have not been sociologically identified. However, the 'drafters' (in ministerial cabinets, for example) who 'hold the pen' during a process of drafting 'pure law' are not, in most cases, the main authors of the texts but merely the translators into this constrained language of the political will expressed by other social actors (formal officials, parties, lobbies, etc.), whose identification is a matter for another sociology consisting of assessing the influences of the various parties. Obviously, the answer consisting in saying that the author of a European text is the European Union would not be legally wrong, but it would be a sociologically insufficient answer to satisfy the first condition; on the RGPD, for example, one could impute the authorship of the text to both the European Union and the United States of America, given the intensity of the negotiations between the two.

- On the second condition: in "pure law" the choice of words, groups of words, sentences or parts of sentences ("items" or "tokens") is constrained by a legal lexicon often announced at the beginning of the text, particularly in European texts, or already defined in previous legal texts, which leaves no lexical choice to the "drafters", i.e. those who "hold the pen".
- The statistical frequencies that can always be produced on any corpus, have no sociological meaning when it comes to "pure law" texts where the number of items does not depend on the stylistic preferences of the author but on the legal-political conditions of construction of the text.
- For example, if a text on personal data requires 10 out of 50 articles referring to "personal data", which has been defined in the preliminary lexicon (or in other legal texts), the drafting will probably contain 10 times the use of the expression "personal data" but the drafters will not replace this expression by the equivalent one of "privacy information" only for stylistic reasons (such as avoiding repetitions) since this would be detrimental to the clarity of the law. Thus, in this example, it will be impossible to give a sociological meaning to the fact that the expression "personal data" appears 10 times in the text (unless we look for this meaning in a monographic study of the socio-genesis of each text, which is not part of our working perspective). By extrapolation, we understand that the problem will arise in the same way in any text of pure law.

- Avenues for quantitative analysis:
- The "fragmentation and defragmentation movement" would potentially lend itself to a dynamic graph approach over time.
- Another interesting approach could be to analyse citation networks, through a recognition of named entities in order to form a graph.
- Last idea: segmenting texts and transforming them into vectors could allow, by then decreasing the dimensionality, to identify possible proximities via a cartography. Generally speaking, in terms of machine learning, a large part of the task consists of forming clusters, so all the algos developed for this can be tried. This is the whole point of these approaches: they are experimental, and we are never quite sure what we will find.

- Another classical approach, called "TF-IDF", allows to see which are the most characteristic terms of a document vs. a set of texts, and could be used within the corpus or with a contrast corpus.
- One could also present the corpus in the form of "word embeddings", i.e. position each word according to its co-occurrences in an n-dimensional space, which allows to see which words appear in similar contexts. (TF-IDF (term frequency-inverse document frequency) is a weighting method often used in information retrieval and in particular in text mining (Zipf's Law).
- This statistical measure allows to evaluate the importance of a term contained in a document, relative to a collection or a corpus. The weight increases in proportion to the number of occurrences of the word in the document. It also varies according to the frequency of the word in the corpus. Variations of the original formula are often used in search engines to assess the relevance of a document according to the user's search criteria. )
- From the point of view of tools, one can do interesting things with TXM (text metrics), which can be downloaded free of charge and is relatively accessible.

- The problem of the uses and functions of metaphors in law has already been the subject of numerous works (F. Ost for example). In the case of biotechnologies, many commentators have noted the very frequent use of pictorial language.

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