Towards a naturalization of social sciences ? A case study on semantic social networks analysis

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Contemporary sociology and anthropology have been deeply influenced by works whose main challenge was to overhaul the distinction between nature and culture. These include the emblematic research lead by Bruno Latour or Philippe Descola, the first in the field of the sociology of science and technology (Latour, 1991), the second in what he calls himself an « anthropology of nature » (Descola, 2005). Both authors agree to move the border that social scientists previously placed between naturals beings and cultural beings to a dotted line which separates humans from non-humans, these latter constantly weaving complex links to the first ones and forming "hybrid networks".

In their introduction to the book *Naturalism versus constructivism* (de Fornel & al., 2007), de Fornel and Lemieux seek to overcome the sterile opposition between "constructivism" and "naturalism" and call for a "non-reductionist naturalization of social sciences". The authors identify two possible routes for such a conversion of social sciences. The first one would be a *praxeology* concerned with institutions not as abstract social constructs but in action. The second one with the approach proposed by Descola, Latour and Callon and is called a "*metaphysicalist comparatism*", which would allow to "never lose sight of that te *naturalist-constructivist metaphysics* is not the only possible method to refer to *the existing* ".

In this paper, we propose to consider, in light of these theoretical distinctions, the path followed by a stream of research emerging in social sciences : the semantic social networks analysis. This field of research has emerged from the convergence of methods from science of complex systems and sociology. In particular, french researchers from the former *Centre de recherche en Epistémologie Appliquée (CREA)* in the Polytechnique School have developped both a conceptual framework and methodological tools (an online platform allowing socio-semantics corpus

analysis) in order to give an empirical basis to the concept of « epistemic communities ». First confined to the analysis of scientific communities (Roth, 2005; Cointet, 2009), this model has been gradually extended to other data, particularly those produced by the Internet users (Taraborelli & Roth, 2011 ; Cardon & alii, 2014). The greatest ambition of this stream is clearly expressed in one of the first PhD thesis is this domain about "co-evolution in epistemic networks" : "Agents producing and exchanging knowledge are forming as a whole a socio-semantic complex system. Studying such knowledge communities offers theoretical challenges, with the perspective of naturalizing further social sciences, as well as practical challenges, with potential applications enabling agents to know the dynamics of the system they are participating in. » (Roth, 2005).

It seems to us that these approaches show a very thorough formalization of the actor-network theory since it is based on the joint analysis of "individuals" and "concepts", *id est* humans and non-humans, the latter being objectified, made *actors* with their representation as nodes in socio-semantic networks. In addition, the researchers of this current, first trained in mathematics, physics and complex systems, are claiming a "naturalization of the social sciences" project calls an epistemological questioning and debate among practitioners of sociology.

Thus, relying both on a corpus of documents representative of the development of this line of research, and on a study of the diffusion in european social sciences institutions of the ideas, tools and researchers supporting the semantic social network analysis, we propose to highlight the methodological and epistemological concerns of the expansion of this research field for social sciences[1].

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[1] In comparison with the use of other new quantitative methods in sociology like multi-agents models, which have already provoked reactions in the social complex systems analysis community (Venturini & alii, 2015).

Bibliography

Jean-Philippe Cointet, *Dynamiques sociales et sémantiques dans les communautés de savoirs. Morphogénès et diffusion*, Thèse de sociologie de l'Ecole Polytechnique, 2009.

Philippe Descola, Par-delà nature et culture, Gallimard, coll. « Bibliothèque des sciences humaines », 2005.

Dominique Cardon et al., « Topographie de la renommée en ligne. Un modèle structurel des communautés thématiques du web français et allemand », Réseaux 2014/6 (n° 188), p. 85-120.

Michel de Fornel, Cyril Lemieux (dir.), Naturalisme versus constructivisme ?, Éditions de l'EHESS, coll. « Enquête », 2007.

Bruno Latour, *Nous n'avons jamais été modernes – Essai d'anthropologie symétrique*, La Découverte, 1991.

Camille Roth, *Coevolution in epistemic networks. Reconstructing Social Complex Systems*, Thèse de doctorat de l'Ecole Polytechnique, 2005.

Taraborelli Dario, Camille Roth, "Viable Web Communities: Two Case Studies", in *Viability and Resilience of Complex Systems*, Springer, 2011.

Tommaso Venturini, Pablo Jensen & Bruno Latour (2015), « Fill in the Gap. A New Alliance for Social and Natural Sciences », *Journal of Artificial Societies and Social Simulation* 18 (2) 11, <http://jasss.soc.surrey.ac.uk/18/2/11.html>