

The emergence of the Digital Humanities: An epistemological cartography of thematic issues in French academic journals

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The growing importance of the *computational turn* has profoundly affected the landscape of the social sciences and humanities (SSH). One of the most profound transformations caused by the development of digital technologies is the changes of the practice conditions and the production of knowledge (Berry, 2011; Gold, 2012; Liu, 2009). In recent years, French academics working in the SSH have been devoting attention to “Digital Humanities” (DH), a novel territory that fosters collaboration, openness, and enhancement of knowledge.

By assessing the emergence of those new practices, we can (re)discover a close link between technical culture and the culture of scholars. Since the culture related to computers appears highly technical (Guichard, 2013), it is an epistemological challenge to provide a critical assessment of the evolution, the structure and the dynamics of this new phenomenon. The study of this effect in the light of new epistemologies and paradigm shifts is promising in such a way that allows us to understand what is *fabricated* in the phenomenon, in terms of digital culture, both profanely and scholarly, and how much our digital practices are orchestrated (Granjon & Magis, 2016; Kitchin, 2014). The starting point of this work is to trace the emergence of DH, using corpus analysis, through particular thematic issues of French academic journals. The next initiative is to find ways to illustrate, using cluster analysis, how digital mediation and networked collaboration influence the problematic(s) and the episteme(s) of disciplines commonly grouped under the label SSH: the adoption of emerging approaches and new research methods, editorial practices, and also combinatorial potentialities and questions posed by the uses of the “digital”.

Corpus analysis

This task aims to map principal themes and emerging practices of French academic sphere, in terms of research, knowledge production and dissemination. The further objective is to locate, by a cartographic and cluster-based approach, the current state and scientific positioning of France research in the international context. The scope is not extended to the whole French-speaking landscape, which means that the research is bounded to the academic journals in France only, not in Belgium, Quebec, Switzerland, and the francophone African countries.

The database Cairn and the portal Revues.org offer the comprehensive collection of French language publications in the SSH. The material analyzed has been collected from nine academic journals (electronic and print) (see Table 1), which have thematic issues dedicated to the topics of DH. It should be noted that four of them are published exclusively in

electronic format, showing innovation in the way that scientific information is communicated to the research community. The corpus is composed of 77 articles (of which 30 is co-authoring) in ten issues, whose themes vary from neo-structural sociology, critical theory, to transmedia and computer literacy (see Table 2). All of the issues had been published in a period of fewer than three years. It is noticeably short when we consider the publishing process in scholarly journals, but also remarkable regarding an "emergence." The earliest issue titled "Digital epistemologies of the SSH"¹ appeared in *Revue Sciences/Lettres* (n°2, 2014). The latest thematic issue is "DH and Information and Communication Sciences," which had been published in *Revue française des SIC* (n° 8) in April 2016.

Table 1 Distribution of the articles analyzed per newspaper

<i>Journals</i>	<i>Abbreviation</i>	<i>Type</i>	<i>N</i>
Cahiers du Numérique	CdN	P, E (c)*	14
Critique	C	P, E (c)	10
Multitudes	M	P, E (c)	4
Revue d'Anthropologie des Connaissances	RAAdC	P, E (c)	5
Revue Française des SIC	RFdSIC	E (r)	8
Revue Sciences/Lettres	RSL	E (r)	12
Socio	S	P, E (r)	10
Tic & Société	TS	E (r)	8
Variations	V	E (r)	6
Total			77

*Notes: P = print; E = electronic; (c) = available in Cairn; (r) = available in Revues.org

It is astonishing when we take into account the journals' periodicity. While only *Critique* is published monthly, three are quarterly (*Cahiers du numérique*, *Multitudes*, *Revue d'Anthropologie des Connaissances*), one is tri-annual (*Socio*), one is bi-annual (*Tic & Société*), and the other three are annual (*Revue françaises des SIC*, *Revue Sciences/Lettres*, and *Variations*). While most of the journals are in the fields of Information and Communication Sciences, some exceptions might raise curiosity. For instance, the journal *Critique*, founded in 1946 by Georges Bataille, is a journal of general interest, with the orientation slanted towards literary and cultural analysis.

Table 2 Summary of 10 thematic issues in 9 journals

<i>Issue</i>	<i>Title</i>	<i>Themes</i>
Revue Sciences/Lettres (n°2, 2014)	Digital epistemologies of the SSH	epistemology, neo-structural sociology, anthropology, digital fictions
Tic & Société (vol. 7, n° 2)	Digital worlds: new research perspectives	digital research, qualitative and quantitative data, ethical issues of digital practices
Cahiers du numérique (vol. 10, n° 3)	The "delivered" humanities	transliteration, transmedia, delivery, network analysis

¹ All titles and terms originally in French have been translated by the author.

Cahiers du numérique (vol. 10, n° 4)	What arrangements for DH?	holistic approach, arrangement, digital traces, participative science, social simulation
Revue d'Anthropologie des Connaissances (vol. 8, n° 4)	The "delivered" humanities	book culture, re-invented reading
Socio (n° 4, 2015)	The digital turn... and after?	digital environment, computational turn, scientific culture, resources
Multitudes (n° 59)	DH 3.0	DH manifesto, computational subjectivity, computer literacy, media archeology
Critique (n° 819-820)	Numbers and letters	transhumanism, digital materialism, mutations, algorithmic governance
Variations (n° 19)	Criticism and DH: For a materialistic approach of the "immaterial"	scientific production, social simulation, digital breaking, critical theory
Revue française des SIC (n° 8)	DH and Information and Communication Sciences	Uses of <i>dispositif</i> , discourse of the information society, empirical practice of digital, pluridisciplinarity, design turn

Cluster Analysis

The corpus-based clustering method is used to identify trends, patterns, and the true ecological mechanisms. We aim to illustrate emerging topics and avenues of research and tackle the questions of DH's disciplinary cohesion that have generated widespread discussion and debate among French academics. Based on the corpus of full-text articles, we extracted word co-occurrence counts over the corpus and mapped all co-occurrences into a two-dimensional cartography using VOSViewer. We then examined cluster networks of the whole corpus (see Fig. 1) and of each journal (see Fig. 2).

Fig. 1 shows the co-occurrence term map of all ten thematic issues. A circle represents each term or concept. The circle's diameter and the label size represent the term's frequency. Its proximity to another term indicates the degree of correlation between the two concepts, and its color represents the group to which it conceptually belongs. Because the concepts are spatially interdependent in three-dimensional space and the program is limited to a two-dimensional representation, some relationships cannot be visible.

Table 3 List of clusters with the most frequently used terms

<i>Cluster</i>	<i>Frequently used terms</i>
Cluster 1 (green)	scientific, discipline, digital humanities, epistemology, SSH, dialogue, design, academic, researcher, free access, Berry, code, domination, liberation, evolution
Cluster 2 (red)	web, image, public, MOOC, content, Internet, terrain, actor, site, Google, traffic, Facebook, interaction, emergence, size, ICT, message, review, blog
Cluster 3 (yellow)	text, book, century, page, article, figure, Rousseau, work, manuscript, Diderot, edition, letter, presentation, word, rhetoric, paper, volume, view, version, composition
Cluster 4 (blue)	concept, arrangement, medium, Shakespeare, concept, Foucault, archeology, logic, history, resource, condition, society, virtual, theoretical, human, action, meaning, use, norm, perception
Cluster 5 (pink)	network, center, group, object, measure, class, character, centrality, classification, sentence, novel, hypothesis, value, distance

Based on those term maps, we analyze each cluster by looking back the articles that contain the cluster's most popular keywords, and define the transversal themes of each cluster:

1. Epistemological issues posed by the digital humanities: the role of ICT as a tool to support and enhance interdisciplinary research within the SSH, the *making* of citizen participation, its community-based and collaborative essence. (Cluster 1)
2. Researchers' re-consideration of the role played by social media and new socio-political relationships, and the practices they make possible (Cluster 2)
3. Digital methods in the humanistic framework: Research and the creation facing the digitization of cultural heritage (Cluster 3)
4. Rethinking of the scientific ecology (Cluster 4)
5. DH's opportunities to broaden the spectrum of working and exchange languages, and to push the humanities into new territory of collaboration, openness, and experimentation (Cluster 5)

In examining the Cluster 1, we see how the *digital turn* has considerably transformed everyday life, shattering the relationship that individuals have with the world and leading them to reinvent their ways of interacting. The Cluster 2 indicates that the rise of new technologies has also had significant scientific consequences: with the changing conditions of knowledge production and dissemination, the whole relationship to scientific research has been transformed. In the Kuhnian sense of an ontological shift of the positive sciences, the Cluster 5 suggests the humanistic understanding of technology, which consists of the “urgent inquiry into what is human about the *computational* humanities or social sciences” (Berry,

2011, p. 9). Both the Cluster 3 and 4 reflect on the new knowledge, new uses, new postures and new paradigms that characterize social and human sciences research in the digital age, including the new circulation of knowledge results and the ability of researchers to make the best use of the data produced by these new tools. What is in debates is whether and how the work that digital humanists perform is scholarly and theoretical in scope (Cluster 4).

Future Work

In this paper, we attempt to trace the emergence of DH through ten thematic issues of French journals. The aim is to map the emerging practices and the dynamics of this phenomenon, in terms of research, knowledge production and knowledge dissemination, and the modalities that allow DH to develop new social and editorial assignments. To achieve the further objective of locating the current state of France research in the international context and move the discussion forward from that point, there is a need for further bibliographic analysis which requires the study of co-citation and co-authorship networks, and the cluster analysis in both networks. The relative lack of internationally co-authored papers in our corpus causes a difficulty to track, analyze and visualize research using citation databases such as LISTA, Scopus or Google Scholar. Efforts must be made to find a modified and French-customized author co-citation analysis method.

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