Conservative culture or diverging identities? – studying resistance to technology in academia

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Abstract

Scholars interested in the application of new technologies in their research usually emphasize the promise: new ways of handling their materials, more efficient or effective working routines, or even completely new research questions. In virtually every field, these pioneers are confronted with skeptics, who tend to point to the potential disruption of existing quality standards, the uncertainties with respect to outcome, and the huge investments needed in terms of precious research time and support staff. These conflicts and discussions can be analyzed in terms of the attitude with respect to technological change (e.g. resistance to innovation), or in terms of interests and social networks. In this paper, I propose an alternative venue and analyze them as the construction site of new academic and scholarly identities. This may also clarify why some technological interventions in scholarly practice may be perceived as threatening: they may undermine a specific interpretation of what it is to be a scholar, while implicitly or explicitly promoting an alternative form of academic life. This analytical perspective can also be used to study new cyber-infrastructures, digital workbenches, and information environments with respect to their implications for academic life forms.

Introduction: from e-science to e-research

I think it is not an exaggeration to say that in many ways the social sciences and humanities are reshaping themselves. And although I certainly do not want to claim to have a complete overview of the relevant literature (isn't this precisely one of the anxieties in scholarship nowadays?), the future of the humanities and of scholarship seems to be on the agenda from three distinct perspectives:

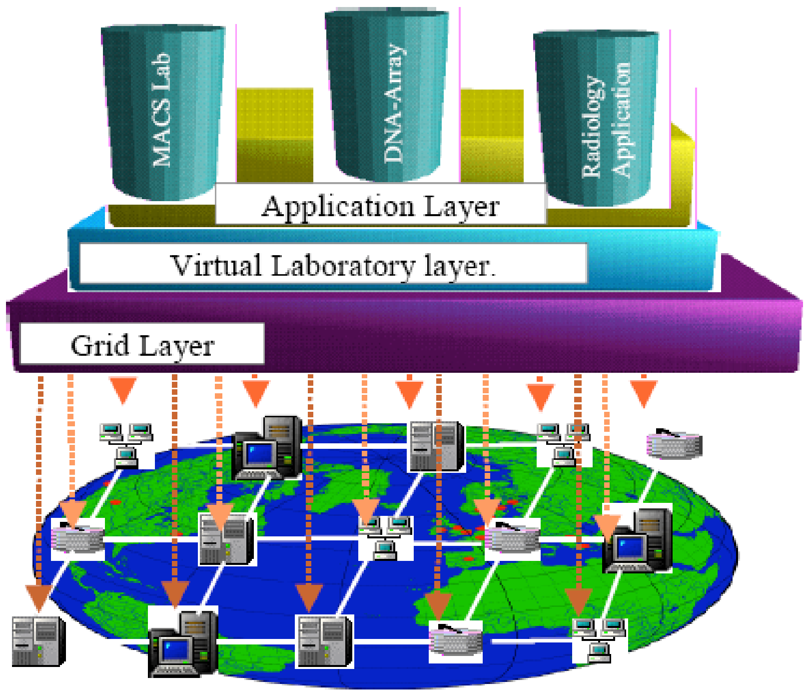
- Changing roles of the humanities and scholars in society

- Technological change, in particular with respect to digitization and communication
- Shifting boundaries between scientific and scholarly fields and the emergence of interdisciplinary centers and methods.

All three perspectives are the result of a mix of internal and external influences, of bottom-up processes of changing intellectual fashions and students voting with their feet in favor of novel fields or approaches, and of top-down decisions of shifting funding for teaching and research from one area to another. Historians of science have convincingly shown that it is not very useful to try to distinguish "pure" intellectual development from external influences in the development of scholarly and scientific research (Bynum, Browne, & Porter, 1981; Collins, 2001). For example, many external influences manifest themselves as organic bottom-up processes when a new generation of researchers enters a field with new intellectual styles and concerns. The upshot of this is that it seems also disadvantageous to discuss these three perspectives separately, since their implications cannot easily be explored in isolation of each other. Yet, it is striking how often a particular analysis of the future of the humanities and social sciences focuses on of these perspectives, sometimes mentioning one of the other two aspects only in passing.

For example, the Gulbenkian Report on the restructuring of the social sciences (Wallerstein, 1996) "Open the Social Sciences" is built on the premise that the existing disciplinary boundaries between the natural sciences, social sciences, and humanities had outlived themselves, and are actually creating stumbling blocks rather than than helpful demarcations. The report discusses institutional mechanisms that maintain these boundaries and emphasizes that most interesting and pressing social and scientific problems are inherently interdisciplinary. The Gulbenkian Report provides a lucid analysis that is still in many ways relevant, but one does not find many indications that the authors at the time were aware of the potentially upsetting role of increasing information flows and of information and communication technologies.

The role of information and communication technologies (ICT) is, on the other hand, central in the recent report of the American Council of Learned Societies on Cyberinfrastructure for the Humanities and Social Sciences, "Our Cultural Commonwealth" (ACLS, 2006). I think the report can be seen as the result of a growing awareness that it is not sufficient to simply claim that large-scale computational facilities and broadband networks will service all, or all relevant, fields of enquiry. The first reports on cyberinfrastructure and e-science did actually, more or less explicitly, assume this (Atkins et al., 2003; Berman, Fox, & Hey, 2003; Hey & Trefethen, 2002; Vann & Bowker, 2006). They were strongly influenced by computer science paradigmas about the layered nature of computer infrastructures, building up from very general networks to middleware to specific applications. Only the last layer would be field-specific. An example of this layered structure and its increasing field-specifity is pictured in Figure 1, from a key paper in the creation of Dutch e-science infrastructures (Berg, Jones, Osseyran, & Wielinga, 2003).



The Virtual Laboratory Layer within a Grid Architecture[11]

Figure 1: e-Science Infrastructure (from Berg et al. 2003, p. 12)

The recent ACLS report has a different emphasis and spells out an agenda of informatics for humanities that does indeed differ from more traditional computer science approaches, although building on this expertise. For example, it makes the connection between new information tools and the tradition of dealing with information and complex collections in the humanities. The humanities, far from being a backwater with respect to ICT, are actually very well placed to play a leading role in the creation of new information environments for scholarship. The report is also a recognition of the specific needs of the humanities and interpretive social sciences. It defines the future of scholarship as shaped by a grand challenge. Meeting this challenge will help create an integrated networked cultural record that provides universal access to human heritage for everyone. Building this cultural record requires, still according to the report, forms of intensive collaboration among scholars as well as cooperation with librarians, curators, and archivists. The report also identifies a major challenge for computer scientists: the building of tools that support new ways of working in the humanities. Interpretation is at the heart of the humanities, and we are still far from the situation that computer-assisted interpretation is common in the humanities or qualitative social sciences. We need new tools for finding patterns in large data sets and collections (heuristics) as well as tools that support the interpretation (hermeneutics). The ACLS report is, I think, a very convincing delineation of what digital scholarship is about: it is not only tool building, or making infrastructures available and then hope that scholars will indeed make use of them, but is the *reconfiguration of the very essence of knowledge making*.

This is also our central concern at the Virtual Knowledge Studio for the Humanities and Social Sciences (VKS). As an aside for those readers unfamiliar with the VKS: the process of the creation of scientific or scholarly knowledge is our core research object. It also explains why we proposed in 2004 to use the term e-research rather than e-science (which at the time was next to "cyber-infrastructure" if not the exclusive term than certainly the dominant one) (Wouters, 2004). The fact that it has now become common to speak of e-research rather than e-science can be seen as another indicator (like the publication of the ACLS report is) of a growing awareness of the specificities of information infrastructures for particular fields across the whole spectrum from natural science to the arts. In the context of *e*-research, it is tempting to focus on the digital technologies. Such an approach would, however, ignore the epistemic dimension of knowledge practices. Scholarly and scientific developments are intellectually codified, so that they are relatively resistant to external steering, but not to technological change. The study of the interaction between users, designers and technological artefacts is the topic of a number of well-established fields of research: humanities computing, social informatics, technology studies, human computer interaction, computer supported cooperative work, and innovation studies. Although the researchers at the Studio are able to draw upon this knowledge, our research agenda is not limited to these user-oriented paradigms. The central problem in the development of e-research is not the technology, nor the role of the user in technological environments, but the cultural and historical specificity of knowledge production in the new technologically mediated contexts. This is the reason the VKS puts knowledge creation centre stage. Our central research question is how it is possible to develop novel ways of knowledge creation in the humanities and social sciences by utilizing and adapting e-research concepts, instruments and ways of working. This includes the epistemic and cultural effects of e-research on the humanities and social sciences.

Conservative academic culture

So overall, the ACLS report is very valuable as an agenda for the humanities, and at the Virtual Knowledge Studio we have read it with great interest since it dovetails so beautifully with what we are doing. Reading the ACLS report, I could not suppress the feeling that we should perhaps be even more focused on clarifying the implications of how the notion of digital scholarship is defined. First, the report has a comparable weakness to the Gulbenkian Report mentioned above. It does not make the connection with the changing role of the humanities, or with the discussion about changing boundaries among fields. The report only mentions the need of interdisciplinary research in general terms, but does not spell out what this means and how the balance between disciplinary and interdisciplinary work should be. I think studying and exploring these interconnections is an important area for more empirical studies in the area of e-research. How can we use all three perspectives to study the dynamical development of scholarship, digital and non-digital?

Second, it seems to underestimate the nature of one of the barriers that stand in the way of the future of scholarship. The report identifies 6 "key challenges" that must be engaged in order to fully realize the potential of digital scholarship: the ephemeral nature of digital materials; the nature of data in the humanities and social sciences; copyright issues; the publication system and its mix of three different economies; the lack of resources in the US; and the conservative culture of scholarship.

It is the last barrier that I'd like to delve into. The report defines it as follows (p. 28-29):

> A recent study of the state of American literary scholarship online identified several cultural features among humanists that seem to militate against change. Despite the demonstrated value of collaboration in the sciences, there are relatively few formal digital communities and relatively few institutional platforms for online collaboration in the humanities. In these disciplines, single-author work continues to dominate. Lone scholars, the report remarked, are working in relative isolation building their own content and tools, struggling with their own intellectual property issues, and creating their own archiving solutions.
>
> Many have contrasted this pattern to that found among technology-intensive sciences and engineering, where "large, multidisciplinary teams of researchers" work "in experimental development of large-scale, engineered systems. (…) In contrast to this collaborative model, Vice President for Information Technology and External Programs Stephen Brier of the City University of New York told the Commission, "humanists tend to be more focused on individual theorizing and communicating of ideas and information about their disciplines. Technology is not seen as a necessary, let alone a required, tool for collaboration in the humanities the way it is in the sciences."

The study quoted in this section of the ACLS report does indeed give a very apt picture of position pioneers in the humanities, and, I would add, qualitative social sciences (Brogan, 2005, p. 31):

> Until quite recently, the work of American literary scholars engaged in applying new media to their teaching and research has been viewed by their peers with a combination of skepticism and bemusement, tinged by awe, if only at their colleagues' quixotic daring. Laboring on the outskirts of the profession, these scholars have launched their work in the distant harbor of humanities computing, e-text centers, and digital libraries, in isolation from their peers and their home departments. They have been accorded cult-like status as technically savvy mavericks, taking professional risks of considerable consequence. Because their work largely falls outside the safety net of traditional peer review, it has rarely been discussed in the core journals of the discipline unless one of its proponents is inspired to write about his or her experience.

Brogan (2005) concludes that in order to change scholarship, "we need scholarship", urging humanists to keep up creating more models of success in digital scholarship. I do not wish to dispute this conclusion and I do think that the quotes above describe still rather well how the actual situation in digital scholarship is, not only in the US but also in other countries (Boonstra, Breure, & Doorn, 2004). The question I'd like to raise, however, is whether the notion of "conservative culture" as used by the ACLS report is the most effective concept to analyze the dynamical interaction between advanced technologies and scholarship. This explanatory model has three important drawbacks. First, it tends to silently promote a way of thinking in which "technology" is unequivocally on the side of change and "culture" on the side of conservatism, a way of thinking which is surely contradictory to the very notion of digital scholarship which is so central to the same ACLS report. Of course, technological configurations can provide very strong barriers to change, as for example the US system of highways proves daily (Nye, 2006). Conversely, cultural motifs can be important carriers of and incentives to innovation. Second, it sets up an asymmetry between change and continuity in favor of change. This is understandable in the framework of a missionary report like the ACLS partly is, but runs the risk of begging the very questions that need to be studied and discussed if we wish to contribute to an effective cyber-infrastructure for the humanities. Third, the notion of a "conservative academic culture" tends to lump together many different aspects of present academic scholarship, and thereby obscures the differing underlying motifs and dynamics. So why don't we move away from the notion of a conservative culture as a barrier standing in the way towards the analysis of really existing epistemic cultures in the humanities and social sciences (Davidson & Goldberg, 2004; Knorr-Cetina, 1999; Rheinberger, 1997)? Developing a less missionary and more analytical take on resistance among scholars will, I argue, enable us to distinguish between different dynamics contributing to resistance to change.

Epistemic culture and style of research

The phenomena grouped together under conservatism can, to start with, be distinguished between behavior of scholars on the one hand, and institutional arrangements on the other hand. Institutional arrangements that have an important impact on the eagerness to innovate research methodologies and styles in a particular field are in particular: the peer review system of research publications and project proposals; career policies and research performance assessments; funding systems; and the technological configuration of the relevant research institute. Most of these have been discussed specifically in the ACLS report, except research performance assessments. Both research assessments, with its implied criteria of scholarly success, and (individual) scholarly behavior are strongly shaped by disciplinary formations. The conceptual tools to analyze these have already been developed in the fields of the history of science and science and technology studies. The notion of "style of scientific thinking" is particularly useful to understand the use of technology by scholars and the development of scholarship as a cultural process. Developed initially by the Polish philosopher Ludwik Fleck (Fleck, 1979), the concept has been further developed by historian of science Alistair Crombie (Crombie, 1994), further developed by Kwa (Kwa, 2005). As Zuidervaart summarizes (Zuidervaart, 2006):

> Like Crombie, Kwa distinguishes six styles of scientific reasoning that have contributed to the extension of knowledge in the Western Hemisphere: a deductive style, in which postulated first principles form the building blocks on which further reasoning can be based; an experimental style, in which manipulations with all sorts of man-made apparatus generate a new kind of—often practical—knowledge; a style based on hypotheses and analogies, in which metaphorical thinking contributes to notions—for example, "effluvia"—that were used—for instance—in an attempt to understand the universe in a more mechanical way; a taxonomic style, in which the collecting and subsequent ordering of objects and data aim at classification that enhances the body of knowledge; a probabilistic and statistical style—that is, a mathematical method of analyzing and interpreting large quantities of numbers; and an evolutionary style (originally referred to by Crombie as the "historical" or "genetic" style), in which the notion of a historical sequence of events is the leading idea for a further understanding of scientific

developments. None of these six styles is said to be better than the others; nor do they exclude each other.

The last point is worth emphasizing in the context of building new information infrastructures for research. What the ACLS report characterizes as conservatism is, I propose, in fact nothing else but the "lack of fit" between on the one hand the research style implied in a particular cyber-infrastructure tool or set of tools and on the other hand the range of research styles in a particular field or dominant among a particular group of scholars. In other words, if a group of scholars resists or ignores cyber-infrastructural innovation, this does not necessarily mean that they are conservative or are not open to change. It might very well mean that their scholarly needs are not delivered by the cyber-infrastructure or even made more difficult to realize. Or what the cyber-tools promise may be seen as irrelevant from a particular style of research (eg. Wouters & Beaulieu, 2005). Instead of conceptualizing the resistance as an instance of conservatism, we should recognize the silent or explicit resistance as an important moment in the interaction between technology and scholarship, and as an ethnographic opportunity to probe both the research styles in the field and the implied research styles in the cyber-infrastructure that the scholars ignore of fight against.

As I have documented elsewhere (Wouters, 2007), this resistance can be a highly emotional movement which consumes vast amounts of scholarly energy and attention. The reason for this is that research style and scholarly identities are strongly linked. The ensemble of ways of working, methodologies, quality criteria, and technological configuration defines what it means to live as a scholar in a particular field at a particular time in history. Bringing new technological means into a field of inquiry, is not an innocent gesture, nor is it only a matter of bringing more possibilities on top of the already existing ones. Digital scholarship is indeed an strong intervention that touches at the heart of how scholars work (Wouters & Beaulieu, 2007). This has two types of implications, a scholarly one and a political one. To start with the second, it means that enabling new forms of scholarship entails a complicated discussion about the future of a field and of working in that field, which has to draw upon all three dimensions at the same time: the role of humanities in society, the role of information, and redrawing the boundaries between fields. It is not enough to put the question central whether or not scholars wish to cooperate. We do not always have the ready-made institutional means to easily conduct these discussions. In fields like astronomy mechanisms such as the Road Map exist, and in a way the ACLS report and comparable reports elsewhere may play that role. But we have the tradition of essay writing and we have the Internet itself to combine discussions and scholarly exchanges about particular topics, like the culture of gaming, with meta-discussion about the development of scholarship of gaming. Many humanities and technology institutes in the US presently emphasize the thrilling projects they are undertaking and the nice tools they are building. This is all very valuable, so I think what we now need is the next step of a careful incorporation of those initiatives in the discussion about changing research question and agendas, and the kind of labor organization that one needs in the humanities and interpretive social sciences.

The scholarly implication is, that conflicts about innovation in humanities methods and ways of working are in themselves very interesting and strategic research sites and moments. The same holds for non-use of tools and infrastructure or reluctant use. Studying them as moments in which new scholarly identities are being forged is I think a promising research line.

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