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Academic Demarcations: Disciplines and Interdisciplinarity

International Conference in Oslo, September 13-14, 2012

Book of Abstracts

Call for papers: **Academic Demarcations: Disciplines and Interdisciplinarity**

Many of the most exciting and influential academic ventures today are interdisciplinary. Consequently, as academics we increasingly find ourselves working at epistemic intersections where disciplinary identity may recede into the background, while an interdisciplinary “field,” problem, or theoretical perspective takes center stage. Yet with few exceptions our universities – with their faculties, schools and departments – remain largely structured on the basis of the established disciplines. The peer review system, too, is predominantly disciplinary. Thus while research interests may tempt academics across disciplinary borders and into foreign territories, many eventually return to discover that when their academic careers are concerned, discipline is king.

Difficult and rewarding

Although interdisciplinarity is often treated as a recent arrival – full of fresh promise – , the situation described above is actually quite old. Interdisciplinarity has been around for almost a century now. One could even argue that it is as old as disciplinarity. Looking back at this history – spanning both successful ventures such as biochemistry, cultural studies and area studies, and also many less successful and now forgotten ones – we can learn a number of lessons. Perhaps most importantly: Interdisciplinarity is not like entering the great wide open. Rather than offering an escape from structures and strictures, interdisciplinarity is about adding more layers and connections – increased complexity, more topics, multiple perspectives, colliding vocabularies. As Stanley Fish has put it in the title of an essay on the topic, “Interdisciplinarity Is So Very Hard To Do.” And because applicable quality standards are not readily at hand, there is an increased risk that results may be meager, or worse, dilettantish.

On the other hand, when it works, interdisciplinarity yields huge rewards for all parties involved. It is intellectually stimulating for researchers and students; it allows new topics to be analyzed; it allows intercourse (or at least courtship) between otherwise incommensurable paradigms; it produces not only new knowledge, but new *kinds* of knowledge, in the process invigorating traditional academia; and in many cases also reaching out to society at large.

Persisting disciplines

Nevertheless, the disciplines persist as the main structural principle of academia. Which makes one wonder: What *are* disciplines, anyway? Clearly, they are historical constructs, but what made them emerge, and what makes them so enduring? Which functions do they serve? Should they be studied as fields (Bourdieu), as communication systems (Luhmann, Stichweh), as tribes (Geertz, Becher/ Trowler), as fractal patterns (Abbott), as epistemic cultures (Knorr-Cetina), or what? Is the “matrix” of established disciplines primarily a coercive arrangement –

a Weberian iron cage, a Foucauldian panopticon? Or is it rather a bulwark against a rising tide of dilettantism and science skepticism?

The current situation can be seen as a standoff in which neither the disciplines nor interdisciplinarity gains. If so, the relevant and pressing question is: Are there workable alternatives (functional equivalents) on the horizon by which academia can be reformed? However, it is also possible to view the situation not as a problem at all, but rather as a normal and fruitful interplay, conducive to academic evolution. If successful, interdisciplinary ventures become disciplines in their own right (gender studies, biochemistry) and the rest are either terminated after a while, or kept on as permanent exceptions (usually in the form of centers), all of which is testament to the self-regenerating powers of academia. If so, the relevant question is perhaps: How can universities make this process run more smoothly?

The conference will explore these and related questions, dealing with disciplinarity/interdisciplinarity in research as well as in higher education.

Papers

We invite papers on all topics related to the reflections above, including, for instance:

- The historical emergence and evolution of the disciplines
- The history of individual interdisciplinary fields (e.g. cultural studies, biochemistry)
- The fruitful interplay between disciplines and interdisciplinarity
- The problematic tensions between disciplines and interdisciplinarity
- Disciplines/interdisciplinarity and academic careers
- Disciplines/interdisciplinarity in higher education
- Disciplines/interdisciplinarity and society (media, politics, the economy, etc.)
- The future of disciplines/interdisciplinarity.

Organisers:

Kultrans – Cultural Transformations in the Age of Globalization – an interfaculty research area at the University of Oslo

Department of Educational Research, University of Oslo.

Academic director **Helge Jordheim**.

PhD research fellow **Vidar Grøtta**.

Keynotes

Andrew Abbott: Interdisciplinary tolerance

Andrew Abbott is the Gustavus F. and Ann M. Swift Distinguished Service Professor in the Department of Sociology and the College at the University of Chicago. His work includes *The System of Professions* (Chicago 1988), a theoretical analysis of the professions and their development that won the ASA's Sorokin Award in 1991. More recent books of relevance to the conference include a historical study of academic disciplines and publication, *Department and Discipline* (1999) and a theoretical analysis of fractal patterns in social and cultural structures, *Chaos of Disciplines* (2001). Abbott is currently working on a general work of social theory entitled *The Social Process* as well as a book on the future of knowledge.

Sheila Jasanoff: A Discipline in Spite of Itself: Relativism, Reflexivity, and Resistance in STS

Sheila Jasanoff is Pforzheimer Professor of Science and Technology Studies at the Harvard Kennedy School. Her work explores the role of science and technology in the law, politics, and policy of modern democracies, with particular attention to the nature of public reason. Her books include *Controlling Chemicals* (1985), *The Fifth Branch* (1990), *Science at the Bar* (1995), and *Designs on Nature* (2005). Jasanoff takes a keen interest in the development of STS as an academic field, and has recently contributed a chapter entitled "A Field of Its Own: The Emergence of Science and Technology Studies," in R. Frodeman, J.T. Klein, and C. Mitcham, eds., *Oxford Handbook of Interdisciplinarity* (Oxford: Oxford University Press, 2010).

Lars Qvortrup. University mergers between Humboldt and Stanford: The construction and deconstruction of disciplines and interdisciplinarity

Lars Qvortrup is professor at the Department of Education and Philosophy at Aalborg University. He has published extensively on a wide range of topics, including education, knowledge, electronic media, and systems theory. Available books in English are – among others – *The Hypercomplex Society* (2003) and *Knowledge Education and Learning: E-Learning in the Knowledge Society* (2006).

Rudolf Stichweh: On the complementarity of disciplines and interdisciplinarity

Rudolf Stichweh is Professor for the 'Theory of Modern Society' at the University of Bonn. He has published extensively on a wide range of topics, including the sociology of world society, sociological systems theory, and, of particular relevance for this conference, the sociology of science and of universities. His books on the latter topic include *Zur Entstehung des modernen Systems wissenschaftlicher Disziplinen* (1984), *Der frühmoderne Staat und die europäische Universität* (1991) and *Wissenschaft, Universität, Professionen* (1994).

Abstracts

Abstracts in alphabetical order, by (first) authors last name.

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## **Eevi E. Beck**

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### **What (inter)disciplinarity? What do demarcations do?**

The issue of interdisciplinarity and demarcations – divisions, splits, boundaries – brings a host of interesting questions about the Academy and the lives of scientists.<sup>1</sup> In my case, my continued interest in working within the Academy has required not only negotiation of several such boundaries but also some measure of *understanding*, if partial, of how interdisciplinarity works. Thus i much appreciate this conference, where the topic has been placed centrally.

A focus on interdisciplinarity is a focus on boundary areas, shady regions, in-betweens (cf. how a measure of success for interdisciplinarity is its birthing of a new discipline, i.e. gradually ceasing being seen as interdisciplinary). Interdisciplinarity, then, is historically specific (ie. shifting, unstable), relational, and dependent on others' judgements.

Important strands of discussion include differences between disciplines, why and how disciplinary boundaries are maintained, and struggles and achievements of interdisciplinarity. In short, discussions of the business of erecting and maintaining “difference” (e.g as implied in “demarcations”), *including the calls for their reduced impact*, which at times are implied by a focus on interdisciplinarity. An aim of this paper is to add to these the possibility of other perspectives. A specific theory position is explored, less as a “solution” to a “problem” than to demonstrate the possibility of taking a different view. While some work takes as given the existence of a disciplinary “home” scientific community, this perspective addresses a different layer. As such, it becomes possible to examine some implicit assumptions behind the idea of disciplines *and* of interdisciplinarity.<sup>2</sup>

### **Beyond taking disciplinarity as given: (i) Models of exclusion/belonging**

In this argument, is the inter/disciplinary boundary rendered irrelevant – or at least left with the shifting role of highlighting “blind spots” in whatever disciplines contemporarily happen to be established? For now, my chief interest is in the placing of inter- and intradisciplinary experiences as similar or different. Hence: If we are to seriously consider the pain of interdisciplinarity, if we wish to understand such pain, such joys, such indifference; if we wish to understand the pain and gain of not squarely belonging to a discipline, we must also seriously consider the pain – and gain – of squarely belonging. What sacrifices are made to achieve belonging? To (try to) achieve the fettered status of, if you wish to use the Lave & Wenger model, ‘full participation’? [= ‘the pain’] And why? [= ‘the gain’, and/or the dream thereof; hopes and dreams made manifest in action and non-action] And, adding a twist to the story: When does it end? How does a researcher recognise that they are indeed securely placed

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<sup>1</sup> In this paper understood as researchers in academic institutions.

<sup>2</sup> This does not imply a wish to remove the terms. Critically discussing the approach i present as an example of ‘alternatives’ is beyond the scope of this paper.

within a discipline and may figuratively rest on their laurels, in practice perhaps ‘tread water’ rather than swim for their academic lives?

Models which can be explored for their ability to shed light on this include legitimate peripheral participation (Lave & Wenger); marginalisation (e.g. as applied in Beck et al 2004); residuality (Leigh Star & Geoff Bowker). The aim of this is to find ways of thinking & talking which better open topics such as similarity as *questions*. Such discussions can complement discussions of specific challenges of interdisciplinarity.

### **Beyond taking disciplinarity as given: (ii) The work that scientists do**

An interesting question is how the practice of peer evaluation deals with the tentative position of interdisciplinary work. Are there other models than disciplinary anchoring? How are “candidate” proposals for “new knowledge” selected and established within and across disciplines? While the question of how the goodness or otherwise of potential facts are determined often is talked of as if a matter of correspondance with reality, or of falsifiability, the interdisciplinary research area of social studies of science makes it an empirical question: What do (natural) scientists do, and with whom and what, to arrive at a “fact”? Philosopher and scholar of science Isabelle Stengers (and Vinciane Despret) have developed a view of knowledge work in science which, based on the practices of scientists, theorises the conditions for a putative scientific finding to become accepted as such. This is an example of looking at the work of scholars without assuming (nor denying) the presence of a discipline.

Latour (2004) summarises their position in eight points. For the sake of brevity, 3 or 4 of these are examined for implications for understanding inter/disciplinarity:

- a) “The real risk is to have the questions you were raising requalified by the entities put to the test.”
- b) “ ‘scientific’ means rendering talkative what was until then mute.”
- c) Neither remote distance from phenomena/people nor empathy are implied or wanted in this view. Rather, questions take the form eg. of whether distance has been covered “between the contents of the world *before and after* the inquiry”.
- d) There are good and bad generalizations. Latour’s discussion emphasises the consequent (but challenging) legitimation of normative evaluation of science as good or bad. The novelty lies in permitting the (existing) scientific ideal of providing as wide explanations as possible, while rejecting the commonly understood implication of thereby eliminating alternatives. Bad science posits an explanation and discounts all remaining difference as irrelevant, rendering the generalisability tautological. Death by definition.

The prime purpose of Latour 2004 is to build on the eight principles in developing a view of the body not based on a subject-object model. He cites Despret 2004 (who cites James) in an articulated body being one which has learnt to be affected. Science studies must be an act of resistance against the hegemony of simple notions of science in defining what bodies are – and more generally: Against letting science subtract phenomena from the world, pushing “the frontlines of the struggle *inside* the sciences themselves, as Donna Haraway has always advocated”. So let us take the struggle inside – our own sciences, our own conference participation.

### **Interdisciplinarity, disciplinarity, and demarcations between these.**

A question for this conference is the implications for notions of disciplinarity/interdisciplinarity. The Despret/Latour/Stengers view of “affected bodies” doing science: does inter/disciplinarity break down? The Latour/Stengers/Despret view renders disciplines as articulations (of propositions) *and* interdisciplinarity likewise. In my view, not only do disciplines and interdisciplinarity need each other for their existence and thus co-constitute (by definition, you cannot have the one without the other), but in this view they also contribute in

highly parallel ways towards the development of science. To understand interdisciplinarity, we must understand also disciplinarity – or in the terms of the present conference: Understand the function of academic demarcations.

De-emphasised then is discourse which cements the idea of disciplinarity as somehow a basic unit in the diverse worlds of scientific enquiries. An argument which can help destabilise that, to soften its edges, is in the service of those struggling with the hardness of disciplinary categories. The main work, however, in my view is in bringing forth more realistic models/imaginings of what scientists (in which i include myself) actually do.

When non-disciplinarity, interdisciplinarity, trans-disciplinarity, etc, become a necessary constituent of disciplinarity, the question of inter/disciplinarity becomes one of the life and guts of science/the Academy in the first place.

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Between Science and Story: Is IMRAD Commensurable with Narrativity?

The main question posed in this paper is whether the narrativity of historiography is a barrier to interdisciplinarity between history and social science. The dominant trend in historiography over the last thirty years—and in philosophy of historiography for even longer—has been an interest in and an excitement with narrative, to the extent that narrativity has come to be seen as perhaps the defining trait of the discipline. Towering figures within the philosophy of history, such as Arthur Danto, Louis Mink, Hayden White, Frank Ankersmit, and David Carr, have all—in different ways—underlined the importance of narrativity to historiography. In line with the philosophical extolling of narrativity, the vast majority of empirical historians have turned their backs to the ambition that was so prominent in the 1960s of anchoring their discipline among the social sciences and emulating the methods and writing style of these sciences. Instead historians have claimed an identity as narrativists: and proud of it. Sociology, political science, and economy have lost their allure; instead historians have turned for inspiration and theories to social anthropology: the least “hard” or “scientific” of the social sciences with regard to methods as well as writing style.

Simultaneously, during the very same period, a different and to some extent opposing trend has been seen within science and most social sciences, namely an increasing *imradization* of (social) scientific research papers. Though referred to as “the traditional structure of journal articles,” the IMRAD format of Introduction–Methods–Results–and–Discussion is to a large extent a postwar phenomenon. In medicine it surged from the 1950s and has been totally dominant for more than twenty years. In social science, with psychology as a bridge, it has made increasing headway into education (pedagogy), sociology, and political science as well, plus of course economics. Today IMRAD is the dominant format in the leading U.S. sociology journals. In part IMRAD’s transdisciplinary success may be due to the prestige of the “natural” sciences. No doubt it also has to do with the vast increase in scholarly papers, which has led editors and reviewers—and probably readers as well—to appreciate a standard format for easy appraisal and comparison of empirical research.

As the IMRAD format has more or less acquired a hegemony within science and social science, history and neighboring narrative disciplines seem to have been unaffected, even unaware. No movement towards IMRAD can be discerned. Instead historians and scholars within other narrative, empirical disciplines seem happy with a format that remains unanalyzed but which at least is much looser than IMRAD. This certainly calls for an investigation and an explanation, but what is of concern here are the consequences for interdisciplinarity of the format split. Format or structure is no trifling matter: it determines not only how papers are read but whether they are published. Research papers that are not structured according to the IMRAD format stand less chance to be accepted for publication in journals which prefer or insist on this format, as an increasing number of social science journals do. Scholars writing in what we might call essay or letter style within narrative disciplines are therefore to a large extent restricted to outlets within their own disciplines. The result is that they are less read by and known among social scientists.

Individual historians who want to communicate their research to the social science community can try to adapt their manuscripts to the IMRAD format. This requires determination, practice, and a willingness to kill your darlings, as the IMRAD style is much less conducive to, or even opposed to, the sort of “elegant” but perhaps less precise writing style that historians love or at least tolerate. Further, there is a question whether IMRAD can be adapted to suit the needs of narrative historians: can narrative history be written in the IMRAD format if the hypotheses (provided such exist) are clearly formulated in the Introduction; the explication of sources is placed in a Materials and Methods section; the narrative bulk of the paper is put in an extended Results part; and this story can be used to reflect on the hypotheses in an explicit Discussion part? In order to answer this question, someone must try to put his or her historical research within a modified IMRAD straitjacket. Next, provided this can be done without serious violence to the historical narrative—and we do not know yet whether it can—we must ask whether such a modified IMRAD is better suited to some historiographical subdisciplines—social history or economic history—than to fields such as no-longer-so-new cultural history or (other) forms of post-structurally inspired historiography. The latter fields have been in vogue lately. This fact, added to the rise of narrativity in historiography and IMRAD in social science, indicates that the divide between social science and narrative history, or between science and story, for short, is wider today than it has been for at least fifty years.

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## **Vidar Grøtta**

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### **Philosophy and the Unity of Science**

In this presentation I will explore the relationship between modern philosophy and other academic disciplines. I will argue that despite its long history of internal schisms, post-Kantian philosophy has been remarkably consistent in presenting itself as the hub holding the spokes of academic disciplines together, thus preserving the unity of science, intellectually as well as institutionally.

Focusing on the subdisciplines of epistemology and the philosophy of science I will draw on self-descriptions of some of the most prominent schools in philosophy as well as insights from the field of sociology of philosophy in order to compare and contrast the view philosophy has of itself with the views of its significant others. A central question will be: In the face of increasing disciplinary differentiation, and under fierce critique from sociology, history, and

other competing meta-perspectives on science, what options (if any) remain for philosophy in the quest to provide a common ground for all of science?

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**Permeability of Disciplinary Boundaries in the Age of Globalization:
Interdisciplinary Scholarship in International Relations**

Academic debate and discourse on interdisciplinarity is not new; rather, interdisciplinary higher education has been on the global agenda for more than a century. In this context, this paper acknowledges the broad consensus and agreement on the vital role interdisciplinarity plays in research, teaching, and learning. The study makes a case that with the advent of globalization and increased competition for exploring new frontiers of knowledge, academics worldwide tend to problematize disciplinarity and postulate a reconceptualization of disciplines for recognition and incorporation of contributions by scholars working from diverse perspectives to the enrichment, advancement, and transmission of knowledge. Thus, an interdisciplinary approach to knowledge, the paper suggests, triggers and supports new intellectual enterprises.

In a globalized world, we witness an entirely new, unprecedented form of knowledge production where the creation and utilization of knowledge is no longer seen as a linear process. In fact, the forces of globalization demand multiple disciplines to unravel and scientists transgress/cross disciplinary boundaries in their search for new knowledge creation and dissemination. Against this backdrop, this paper particularly reflects on the interdisciplinary character of International Relations (IR) – a successful and fascinating interdisciplinary subject having infinite boundaries. While IR is a full-blown, autonomous, and accomplished academic discipline, its hybrid curricula bring complementary strengths and enlarged perspectives from a diverse array of disciplines including Political Science, History, Economics, Sociology, Philosophy, and the like in order to address the ever-increasing complexities and broader issues as well as to impart unified knowledge and produce cognitive advancement. The argument in the paper then proceeds to how such interdisciplinary breadth of IR learning benefits students and practitioners in the field. The study demonstrates that in the domain of IR, interdisciplinarity supplements disciplinary learning equipping students to respond to challenges that spill over the discipline, work in the confluence of multiple disciplines, and develop research trajectories that do not conform to standard disciplinary approaches. Hence, students develop a ‘meta-knowledge’ of multiple disciplines, methods and epistemologies, and learn how to reflectively integrate and synthesize different perspectives. Finally, the paper concludes that such interdisciplinarity promotes quality research and contributes to solving new problems which cannot be addressed within the individual disciplines alone.

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Jeremy Hutchings

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“Neither fish nor fowl” Mapping an interdisciplinary professional subject.

Cultural heritage conservation has been described as an empirical science devoted to the preventive and remedial treatment of our common inheritance (ENCoRE 2001). At a professional level, the competence required to become a conservator is represented by a blend of theoretical knowledge and practical skills, including the ability to judge ethical and aesthetic issues in a systematic way (Larsen 2008). In the same way as medicine, its academic status cannot be separated from the identity of the various professional specialisms that it contains, which stretch across the full range of human time, location and cultural remains.

The very nature of the conservation discipline locates it in the epistemic intersection between science, technology, humanities, ethics and craft. As such it is more than simply interdisciplinary – it bridge the chasms between both scientific and humanistic thinking as well as the academic and craft-based approach. In the former, often Cartesian logic that represents traditional scientific thinking is incapable of fully describing conservation phenomena in all but the most theoretical terms whereas the humanistic approach lacks precision. Often more holistic approach that considers a wider perspective is required. In the latter academic investigation is synergistic with mastery in craft-based traditional skills which leads to a greater understanding of the techniques and materials that have been used in our past. When considered in combination, the level of complexity that is encountered in teaching and research within this subject can only sufficiently understood via a systems-based approach that considers as many factors as possible.

This paper examines the nature of cultural heritage conservation as a university based professional discipline. It describes how the older and more established disciplines such as art history and chemistry have struggled to come to terms with the combination of evidence and values-based research and teaching that is required to best foster competent conservation professionals. It gives examples of how, in the past, an over-reliance on these disciplines has resulted in some major misunderstandings and describes how, while possessing the strength of a distinct and well defined professional field, the constant pressure to conform to one of many academic and skills based disciplines has placed it at a disadvantage within a university system, that are largely organized by established disciplines. The paper offers a solution to this problem through the mapping of knowledge, skills and competence that is required to enter this profession. Mapping competence both by breaks down the barriers between the different disciplines and identifies their commonality. It builds on the recently published “*framework of competences for access to the profession of conservation-restoration*” (ECCO 2011), which offers an insight into the broad range of knowledge skills and competence required by a conservator operating in a multidisciplinary environment. This framework represents a significant step towards a definition of a set of competences that are both diverse and dynamic. It demonstrates the strength of having a well-defined map of an interdisciplinary subject showing how and where its links to more the more traditional fields. The benefits are tangible; definition enables quality control and systematic improvement. As well as strengthening the subject it has identified areas that require further development, for example, taxonomy of skill that are relevant for this field. Although skill is currently measured indirectly there is a need to develop this further within the university system.

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Inter-disciplinarity of American Studies in Europe and the U.S.

Americanist Liam Kennedy wrote in 2009 that one of the problems for European Americanists is that America is at once the object of study and the object of desire. And this is true in several ways. Both as the center to our periphery when it comes to cultural references (pop cultural or otherwise) and as center to our periphery when it comes to scholarly publishing, America is the object of our desire. And this shows the power structures in what Sheila Hones and Julia Leyda has called the “relational geography” of American Studies. The field of American Studies in Europe can perhaps best be defined through a triangulation; of the institutions at which the work is performed, which are not often similar in structure, the area being studied, which does not always overlap, and the use of methodology, which in no way is homogenous. Indeed the field of American Studies and the interdisciplinarity of American Studies can mainly be defined through the historical structurations of the field itself. The relational geography is manifested in an institutional structure.

The historical structurations of American Studies, as those of other fields in the humanities, are to a certain degree incidental, and at the same time they are dependant upon extraneous circumstances. Which parts of American literature or history or foreign policy one random professor finds interesting, because they mirror her particular experience at home, or because they are exotic and do not mirror her own experience at home, is incidental. On the other hand, the teaching subjects and the academic field is controlled through the use of money; what the power apparatus finds to be important research currently, but also in a much less intentional way through the historical structurations that already lie in the subject or the form of cooperation. The institutional structure has grown forth historically and has been helped along with a donation here and a political condition there.

The field of American Studies in Europe is a child of the Cold War and of re-orientation efforts in Western Germany, but just as interestingly, American Studies in the U.S. is just as much a child of the long trans-Atlantic European-American relationship. The American Quarterly, the journal of the American Studies Association and by far the most prestigious journal in the field of American Studies spent its entire first issue reporting from the first Salzburg Conference of American Studies and on the view of America and impact of American literature in Europe.

In Norway, the interdisciplinarity of American Studies were formed by the historically strong links between the university and the secondary school sector; although Sigmund Skard, the first professor of American literature in Norway, was weary of what he saw as “German” disciplinary specializations, and was impressed with the interdisciplinarity of the new field he witnessed on his Rockefeller-funded year-long study trip to the U.S. before taking his chair as professor in 1948, he felt there was no practical use for Americanist generalists in Norway. His task was mainly to produce English teachers for secondary school, and he was worried that an interdisciplinary study would only attract dilettantes and one or two journalists. Therefore he contended himself with containing this local version of “American Studies” within the English language program of the University of Oslo, holding American literature lectures himself and hiring an American immigrant called Dorothy Burton Skårdal to teach the so-called “background” courses. This historical beginning has produced a very specific set of interdisciplinarity within American Studies in Norway – one which is at odds with the

version of interdisciplinarity of the U.S. field of American Studies, and yet the U.S. conferences are still the center to a Norwegian periphery with regards to conferences, prestige and methodological innovation.

Both the interdependencies of American Studies in Europe and the U.S. and the specific historical situation in Norway lead to very interesting and fruitful disturbances in the force field of the power structures of the relational geography of (interdisciplinary) American Studies, which I would like to explore in this paper.

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## **Helge Jordheim**

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### **Encyclopedias, knowledge trees and time. Interdisciplinarity and orders of knowledge.**

This paper is going to present some preliminary result from an on-going project on the genre of the encyclopedia in the Western world and discuss how they might be relevant for our current debates on disciplines and interdisciplinarity. In the 17th and 18th centuries "*encyklopedik*" was understood as a particular science in its own right dealing with the classification and order of knowledge. At the beginning of the 21st this role seems to have been taken over by the ever-expanding discourse on cross-, inter- and transdisciplinarity. Still, it might be that these two historically distant perspectives on the orders of knowledge have more in common than we tend to think.

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The Impacts of Interdisciplinarity: When Social and Life Sciences Collide

In 2007, David Sloan Wilson, the Distinguished Professor of Biological Sciences and Anthropology at Binghamton University, presented a contemporary academic reality, quoting Ian Lustick, the political scientist from the University of Pennsylvania:

Of course social scientists have no objection to applying evolutionary theory in the life sciences —biology, zoology, botany, etc. Nevertheless, the idea of applying evolutionary thinking to social science problems commonly evokes strong negative reactions. In effect, social scientists treat the life sciences as enclosed within a kind of impermeable wall. Inside the wall, evolutionary thinking is deemed capable of producing powerful and astonishing truths. Outside the wall, in the realm of human behavior, applications of evolutionary thinking are typically treated as irrelevant at best; usually as pernicious, wrong, and downright dangerous. (Wilson 2007)

However, breaking this 'impermeable wall' has shown to be very useful for both social sciences and humanities. Social sciences and humanities might have been slower to adapt to the findings of life sciences and in realizing how important their findings are. However, 'all of this is now rapidly changing. Virtually every human-related subject is being approached from

an evolutionary perspective, mostly within the last ten or fifteen years' (Wilson & Lieberman 2011).

Evolutionary psychology (EP) is a relatively newly formed science that has been around the academic community for less than two decades. From being just an 'emerging paradigm for the social sciences that offers a powerful metatheoretical framework for personality psychology' (Kirkpatrick, 1999), EP has, especially during the 21st century, become a fledgling science that has endowed academia with a potent set of ideas that have more than successfully explained how the brain of the *homo sapiens* species functions. Only in 2010 did the comprehensive, norm-setting essay 'Evolutionary psychology: Controversies, Questions, Prospects, and Limitations' (Buss et al, 2010) get published, wrapping the most important issues up and helping EP find its place among other disciplines. In the words of the authors above,

[o]ver the past 15 years, evolutionary psychology has grown from being viewed as a fringe theoretical perspective to occupying a central place within psychological science. Courses in evolutionary psychology are being offered at many colleges and universities throughout the United States and, indeed, in countries throughout the world. Evolutionary psychology is now covered in all introductory psychology textbooks, albeit with varying degrees of accuracy. (Buss et al, 2010)

Critiques and controversies have accompanied the development of EP, of the likes that Buss et al. categorized in the following manner, namely, that EP

(...) has generated critiques and remains controversial among some psychologists. Some of the controversy stems from hypotheses that go against traditional psychological theories; some from empirical findings that may have disturbing implications; some from misunderstandings about the logic of evolutionary psychology; and some from reasonable scientific concerns about its underlying framework. (*Ibid.*)

EP has not been the only one, nevertheless. With Michael Persinger's *god helmet* and research concentrating on Buddhist monks and Franciscan monks, even more information has been amassed. Namely, 'Scientists like Andrew Newberg want to see just what does happen during moments of faith. He worked with Buddhist, Michael Baime, to study the brain during meditation. By injecting radioactive tracers into Michael's bloodstream as he reached the height of a meditative trance, Newberg could use a brain scanner to image the brain at a religious climax. The bloodflow patterns showed that the temporal lobes were certainly involved but also that the brain's parietal lobes appeared almost completely to shut down. The parietal lobes give us our sense of time and place. Without them, we may lose our sense of self. Adherents to many of the world's faiths regard a sense of personal insignificance and oneness with a deity as something to strive for. Newberg's work suggests a neurological basis for what religion tries to generate' (BBC 2003).

These 'hard results', however, might not be what many want to hear. It seems that it is easier to stick to the current paradigms of 'sociology of religion' that do not really explain much. Yet this is a representation of true interdisciplinarity – a conjoining (and a highly productive and successful one!) of life sciences with social sciences (and humanities). With the findings of neuroscience and EP, sociology and history of religion should receive a plethora of valuable information that could help significantly in research regarding religion.

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**Why do disciplines matter? A view from sociology**

Compared to sociologists of poverty or health or other pressing social issues, sociologists of knowledge studying academic disciplines could be accused of narcissism. This paper argues that research on disciplines also concerns broader sociological issues of power and inequality. As nearly 50 per cent of youth cohorts not only get access to but are rather forced to enter higher education in order to succeed on the labour market, the logics steering higher education systems also steer selection processes to social positions of status, power and privilege. Despite claims about a new inter-disciplinary era, evidence shows that disciplinary logics continue to organise administrative units and standards for quality in higher education. Also, academics, whose identity continue to be primarily disciplinary, have kept much control over curricula and examining processes. Thus, the categorisation of students into failing or successful candidates is largely exerted according to disciplinary criteria. Although this might very well be a good thing, should academics be allowed to do this completely protected from sociological scrutiny? Disciplinary standards of quality, which have an aura of universalism and disinterestedness about them, legitimise power exertion. These standards, and definitions of required knowledge and skills, might not be purely linked to a given cognitive nature of a discipline. An interview-based qualitative investigation by the author of English, French and Norwegian historians' definitions of their own discipline and how to teach and assess history, shows significant diversity. Further, a historical-sociological study reveals how features of their local educational systems, labour markets and intellectual debates influence these varying disciplinary conceptions and requirements. Because disciplines appear to be *legitimate categories of authoritative knowledge*, sociologists need to investigate the underlying types of knowledge, interests or forces that are blended into disciplinary discourse. As disciplines interfere with the selection to unequal positions of privilege and power in society, they matter.

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### On Matter and Meaning: Confronting the Challenges of Interdisciplinary Research

Interdisciplinary research necessarily involves crossing existing boundaries, and hence some degree of linking or mixing, as opposed to separation. In using the term, I follow what is (fairly) well established practice<sup>3</sup> (ref. e.g. Gibbons 1994, following Jantsch in OECD 1972) and distinguish between types of interdisciplinary research according to the level of ambition in terms of integration between them. The greatest challenge of all is collaboration between the natural and social sciences. Here lies the classic divide within academia, over which controversy has raged at least as far back as the famous “Two Cultures” debate, personified by C.P. Snow and F.R. Leavis. The issue arose again in what has by some been called the ‘science wars’ in America (Gross and Levitt, 1994) and reappeared thanks to the famous Sokal Hoax.

In this paper, I shall argue that there is indeed a major gap between groups of disciplines, but that it does not run precisely between the natural sciences and the social sciences<sup>4</sup>, but rather between what I refer to – for lack of a better term – as the ‘hard’ and ‘soft’ sciences. Becher (1989) provides a summary of several of the differences between these. Perhaps the most significant is the reductionist nature of the hard as opposed to the soft sciences. A well-argued elaboration of what this implies is to be found in the work of the philosopher Charles Taylor: “I wanted to argue against the understanding of human life and action implicit in an influential family of theories in the sciences of man. The common feature of this family is the ambition to model the study of man on the natural sciences» (Taylor,1985: 1) «What is striking about this family of theories is their reductive nature.» (op.cit: 2) But I agree with his view that while it is important to criticise this position, there is also a danger of moving too far in the opposite direction: «The kind of critique we need is one that can free it (the scientific outlook and the disengaged identity) of its illusory pretensions to define the totality of our lives as agents, without attempting the futile and ultimately self-destructive task of rejecting it altogether.» (op.cit: 7) «The current vogue, say, of Derrida’s later writings is something close to an unmitigated disaster....» (op.cit: 10)

In this paper I shall argue that the contrast between these two world-views is not evident only between the natural and social sciences, but is apparent also within the social sciences – most clearly between economics and anthropology. (McNeill, 2007) I shall suggest that it may also be found within the natural sciences. Thus, ecology may be seen as ‘soft’ by comparison with other ‘hard’ natural sciences; and the situation may be similar also in medicine.

In this paper I shall use the concepts of matter and meaning to elaborate on the differences between disciplines, seeking to place them along a continuum ranging from physics to linguistics, and to explore the middle ground: those disciplines (the great majority) which

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<sup>3</sup> Much of the criticism of interdisciplinary research, by academics, is surprisingly ill-informed about what it actually is, and ignorant of the substantial literature that has long existed on the subject – for example OECD (1972); Becher (1989); Klein (1990); Salter and Hearn (1996); McNeill (1999).

<sup>4</sup> I define these broadly, for the purposes of this paper: natural science and medicine; social science and humanities.

involve some combination of matter and meaning. This will involve examining the relationship between a discipline and its object of study.

I shall also devote much of the paper to the methods adopted, and in particular the significance of context. All disciplines deal with complex issues, but they do so in different ways. Most importantly, some do so by stripping away context, either in practice, using experiments to create special conditions, as in physics; or in theory, by ‘ceteris paribus’ assumptions, as in economics. The natural sciences have largely progressed by experiments in which extraneous factors are, as far as possible, removed; outside the laboratory, however, it is much more difficult to control for ‘other’ factors. In the social sciences, the same applies. There are few ‘natural experiments’; and ethical or practical considerations limit the extent to which social or psychological experiments can be undertaken. It is no coincidence, however, that economics – which most aspires to the ambition of physics – has in recent years begun to use experimental laboratory methods.

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Faculties, disciplines, philosophy of social science and methodologies

At various points in time during the first half of the 20th century, university departments replaced faculties as the most important unit in university organizations. Departments represented disciplines. In the second half of the 20th century, the research university has

become a mass university, although retaining the humboldtian property of autonomous search for true knowledge. While the humanities and natural science disciplines emerged within their respective faculties, the social sciences emerged as disciplines that only later (mostly some time in the 1960s) were regrouped into faculties.

This paper argues that three different positions in the philosophy of social sciences can be understood with reference to this late founding of the social science faculties. Thus, for the social sciences, the overall structuring of the university in faculties still seems important. In the basic principles of the three positions, we recognize features specific to the natural sciences, the humanities and the social sciences. (In line with earlier published research, I specify this notion as “*practical philosophies of social science*”, using the following labels: the *standard approach* relates to principles recognizable in the natural science/mathematics faculty, the *social philosophical approach* relates to principles recognizable in the humanities faculty, and the *contextualist approach* relates to principles recognizable in the social science faculty.)

However, as an increasing number of students (especially in higher level studies, i.e. master and phd) in the mass university constitute an ever larger demand for methodology textbooks, these methodologies are mostly – explicitly or implicitly – written as disciplinary methodologies. With reference to the faculties-related, threefold typology of practical philosophies of social science, the paper discusses how these disciplinary methodologies are constructed. In a short paper such as this, it will not be possible to cover all social science disciplines, so the major focus will be on economics, sociology and political science.

The purpose of the analysis is to spur (or even provoke) self-reflection among both producers and consumers of such disciplinary methodologies. The paper is part of a larger project – parts of which are already published – that intends to sketch a “meta-methodology” for the social science disciplines, based on a non-reductionist and historically informed sociology of knowledge that pays due attention both to external and internal factors in the development of the social sciences. Such a meta-methodology may also be useful when discussing strategies of interdisciplinary cooperation, both within the social sciences and between social sciences and disciplines within other faculties.

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### **The Norwegian terrorist Anders Behring Breivik’s “delusionial universe”: Experts and disciplines in conflict**

Following his arrest on 22 July 2011 Breivik underwent examination by two court-appointed forensic psychiatrists, who diagnosed him with paranoid schizophrenia. According to the report he was in a psychotic state during the attacks and he was also insane during the 13 interviews the two psychiatrists held with him. The report, presented 29 November, was later approved by the Norwegian Board of Forensic Medicine with no significant remarks. If upheld in court, the diagnosis means that he cannot be sentenced to prison but will be detained in psychiatric care. This was difficult for the public to accept. “I am so angry I could weep,” wrote one woman on the Facebook site of daily newspaper *Aftenposten*. “A man who can plan his misdeed in such detail and carry it out in cold blood is answerable for what he has done.”

Two issues will be in the forefront in this paper: 1) how conflicting expertise and disciplines contributed to the destabilizing of the result from the first court-appointed expert panel, 2) how conflicting expertise and disciplines have contributed to the understanding of the concept “delusion” and to the knowledge practice as it is employed in this case by the court-appointed expert panel, and by its critics. The paper will explore these and related issues employing perspectives from STS on demarcation, co-production, framing and boundary-work.

### **Destabilizing**

Mental health declarations made by court-appointed psychiatrist are routinely accepted by the judiciary and under normal circumstances, the 243 pages report (probably the longest court-ordered psychiatric report ever prepared in Norway’s history) filled with technicalities and complicated vocabulary, would not have been questioned by the public. In this case, however, the report was leaked to the media and well informed journalists started to question not only the conclusion and the conduct of the two experts but even the special knowledge and technicalities it was based on. After a while the whole report (withholding minor personal details) was published on Internet. The legal system and the use of expertise which it is based on, was put under a huge pressure.

The declaration by the court-appointed psychiatrists was challenged by colleagues, but also by other mental health experts (like psychologists). In addition lawyers representing the victims, journalists, political scientists and other specialist on questions concerning Breivik’s political universe contributed with important information that seemed to have been unknown to the court-appointed psychiatrists. Also lay-people contributed with knowledge on Breivik’s politic (mainly on Internet), and also with experience and knowledge on different topics with relevance for the preparation of the criminal act (experts on the drugs he took to make himself strong before shooting, experts on the games he played in years before the act, weapons he used, chemicals, etc).

Despite the fiercely articulated critic of the report, prosecutor Svein Holden concluded in a letter to the court that he would not seek another evaluation. When public prosecutor as well as Breivik’s defense attorney, Geir Lippestad, declared their agreement with the report, many observers no longer believe the situation could change. However, after much public pressure, the Oslo district court gave up its resistance and ordered a second expert panel to evaluate Breivik’s mental condition and to deliver a report before the trial starts at April 16.

### **Delusion**

The report described Breivik as a man living in a “delusional universe”- a paranoid schizophrenic who had lost touch with reality. During the press conference when the report was presented, the prosecutor described Breivik as living in his own delusional universe and that his thoughts and acts are governed by this universe. Many mental health experts expressed surprise that Breivik was found to be paranoid schizophrenic without any evidence of hallucinations or suffers from any other uncontrolled impulses.

During a few weeks, the Norwegian population was educated in symptoms for the diagnosis “paranoid schizophrenia”. The criteria in DSM IV and ICD-10, and the working of the GAF score became household knowledge. With hallucinations lacking, the documentation of delusions became most important. Words like “bizarre” and “grandiose” crept into the Norwegian language. However, the lack of diagnostic precision and cultural contextualization of the concept “delusion” became obvious and the case suggests strong limits to psychiatry in dealing with political crime.

Other critics cite the report’s failure to address Breivik’s online activity. When the report for instance argue for the diagnosis by characterizing many of the concepts in Breivik’s Manifesto

as “neologism” (a criteria for the diagnosis) which are made-up words that typically have only meaning to the individual who uses them, people with experience on his online-activity argued that these words were in frequent use.

According to one definition a delusion is a belief held with strong conviction despite superior evidence to the contrary. Unlike hallucination, delusions are always pathological (the result of an illness or illness process). As a pathology, it is distinct from a belief based on false or incomplete information, dogma, poor memory, illusion, or other effects of perception. How to make this important distinction? The paper examines contributions from different disciplines like philosophy (Karl Jasper), psychiatry (DSM/ICD), psychology (Freud) and neurobiology (Colett et.al.).

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Knowledge cultures as constitutive for students’ learning in higher education:

Disciplinary cultures and Epistemic cultures

This paper discusses the relevance of a disciplinary culture perspective (Becher and Trowler, 2001) and an epistemic culture perspective (Knorr Cetina, 1999, 2007) for understanding the relationship of knowledge cultures to student learning in higher education. As a point of departure, we argue that it is necessary to address education and learning in relation to wider ecologies of knowledge if we are to understand mechanisms of enrolment in expert cultures today. While academic disciplines traditionally have crossed institutional and national borders and formed communities on the international scene, the more recent emergence of networks and technological infrastructures provide new opportunities for participation and mobility. This raises questions not only about what constitutes expert communities but also how they come into being and are sustained (Meyer and Molineux-Hodgson, 2009). Educational programs play a key role in this respect. However, as noted by Nespor (1994, p. 133), they should be understood not only as settings where pre-existing knowledge is conveyed to newcomers but as dynamic sites of knowledge engagement which also link students to “distant sites of disciplinary practice through representational organizations of space-time”. Based on a literature review, the paper examines and discusses how the two perspectives of disciplinary and epistemic cultures have informed research on students’ learning in higher education. Special attention is given to how the respective research traditions have accounted for the dynamic and constitutive role of knowledge, as well as for practitioners’ opportunities for engagement.

The concept of *disciplinary cultures* is often referred to when highlighting differences between academic programs and their respective expert communities (e.g. Biglan, 1973a,b; Becher and Trowler, 2001; Neumann et al. 2002). In this line of research, knowledge cultures are understood as discipline-specific cultures marked by historical accumulation, a high degree of specialization, and distinct institutional community features. Research following this tradition has contributed to our understanding of how different knowledge domains generate distinct patterns of social organization. Moreover, it has developed a set of categories for analyzing and describing such differences, for instance by distinguishing between whether the logics of

knowledge production are oriented towards generalization or specialization, whether the methodological approaches strive towards pluralization or unification, and whether the relations towards the outside world is marked by openness or closure. In later decades this perspective has also been utilized for the sake of identifying further differences between disciplines when it comes to their implications for teaching, learning, and curriculum development. This research has pointed to the importance of recognizing the distinctive features of knowledge domains and their social environments if we are to understand key aspects of teaching and learning. However, when it comes to research approaches, the studies on disciplinary cultures largely rest on interviews and self-reported data from academics and students within the contexts of specific universities or educational programs. In this way, individuals' conceptions of their knowledge domain becomes a prime unit of analysis, while the more dynamic socio-material 'machineries' of knowledge production as well as their complexities and outreach in time and space easily fall out of scope. The learning environments generated from disciplinary cultures are thus accounted for in terms of formal curricula and teaching practices, as well as expectations raised to the students within these practices. Students' enrolment and participation in wider knowledge cultures, and the tools and infrastructures that support such participation, is often not addressed.

The concept of *epistemic cultures* has its roots in the social studies of science and is brought forward by Knorr Cetina (1999, 2007) and her associates. Here, the argument is brought forward that while the notions of disciplines and scientific specialties historically has captured the differentiation of knowledge, these terms do not sufficiently capture the strategies and policies of knowing that inform expert practice. The concept of epistemic cultures is launched to "amplify the knowledge machineries of contemporary sciences until they display the smear of technical, social, symbolic dimensions of intricate expert systems" (Knorr Cetina 1999, p. 3). Research in this tradition has revealed how epistemic cultures are constituted by their distinct heuristic practices and knowledge relations – including instruments, configurations of people and things, strategies, ways of envisioning knowledge, and the ways in which these factors come together to constitute a certain knowledge world. Here, it is also underlined that epistemic cultures and practices today often are dispersed across a variety of sites, in which people come to participate in multiple ways and where the processes and products of different activities are interlinked in complex 'machineries' of knowledge construction. In recent years, the perspective has also informed research on expert practices and learning in professional settings, however this research has by and large focused on work settings rather than on educational activities.

In this respect, we see signs of a growing divergence between studies of student learning in higher education on the one side and studies of knowledge cultures and expert communities on the other. While the latter strand today is informed by the concepts of epistemic cultures and communities and their related analytical resources, the former seems to be largely grounded in perspectives of disciplinary cultures. Moreover, while research on epistemic cultures is influenced by ethnographic and network-oriented approaches, the research on student learning is marked by individualist methodologies. Several consequences of these discrepancies can be imagined. One is the danger that research on student learning maintains a static view of knowledge, and fails to account for the shifting, transforming and multiple dimensions of epistemic engagement (Haggis, 2009). Another is that, as a consequence of conceptual models and research designs, the space and time frames in which learning in higher education is studied, becomes rather restricted. We discuss how these differences may be understood, and consider the possibilities for bringing concepts and methodologies from science studies and research on epistemic cultures more to the fore as analytical resources in studies of student learning.

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### Mapping disciplinarity and interdisciplinarity in the humanities

In this presentation I will introduce a newly established research programme in Denmark, *Humanomics*. The aims of the programme are (a) to map the content and context of the humanist research strategies, and (b) to identify theoretical and methodological resources for developing a naturalised philosophy of science. By looking at the structure and dynamics of the humanities at universities and other research institutions (e.g., museums, archives, cultural institutions), the programme seeks to provide insight into which humanist theories, methods, concepts, etc. that are operative in today's research traditions. The investigation of contemporary and historical knowledge production in the different disciplines of humanities is classified within three main areas: history of science, philosophy of science, and sociology of science. Indeed, by tracing the historical origins of the humanities, and by examining their conceptual roots as well as their social organisation, new diagrams and cognitive topographies can be unveiled that give important insights into the disciplinary and interdisciplinary structure of science, how it changes, and which disciplines that tend to flourish or disappear.

Hence, a particular aim of the presentation is to understand the humanities as situated between disciplinary science and other modes of research. Mapping the humanities involves an investigation of the relationship and flow between research in the humanities, and between the humanities and the social and natural sciences. Research topics include the search for multidisciplinary publication patterns, key-word analysis, new and emerging subfields, co-investigator links, etc. The research programme will run from 2012-2015, and is meant to inspire cross-disciplinary debate on how to track scientific activity and progress across the

disciplines. The aim of this talk is to present the methodological design of the project and discuss challenges and opportunities for a naturalised philosophy of multidisciplinary science.

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At the crossroads between “scientific excellence” and “practice-relevant science”: Epistemic tensions in the Doctoral School

Disciplines are, and have always been, in dynamic change, and with change come new challenges for educating new generations of researchers into the academic profession. This paper address these challenges by focusing on the latest decade’s regulation of the production of knowledge in contemporary PhD Education, and especially, the organising of *Doctoral Schools* (or Research Schools, Graduate Schools, etc.) as a more recent initiative to structure the distribution of knowledge into education as well as research. With regard to a sample of Doctoral schools within the field of Educational Science in Sweden (*Utbildningsvetenskap*) we analyse different ways of organising curriculum knowledge, and discuss what consequences these differences can be said to have for the survival and traditional dynamics of the disciplines within the field.

The Doctoral school is a form of regulation and provision of PhD Education – for example in thematic, interdisciplinary and cooperative forms (with industry and professional practices) which can operate very differently, for example as individual institutes or networks, within or between institutions. It is also characterized by being limited in time and taking project form, for being able to meet “urgent” and “timely needs” of society. Interestingly, the Doctoral Schools are often seen as platforms either for some kind of strategic research building within universities, in Sweden (SOU, 2004:27) for example, through the creation of strong research environments, transdisciplinary and thematic networks or “centres of excellence”, or more externally oriented and expected to serve societal or as industrial knowledge needs and competencies. Both expectations could be motivated as global competitive strategies to promote universities or regions as knowledge producers, or for strengthening research and certain fields of research, research cooperations, and also for compensating for weak research profiles or other areas in need of research-based knowledge and competences. However, embedded within the discourse is a potential tension between “scientific excellence” and “practice-relevant science” – and there are also different ideas about how such knowledge should be organized and categorized. We pay attention to how these tensions and categories are at play, for example in government policies, applications for funding Doctoral Schools and in recent surveys of Educational Science initiated by research foundations and similar. Our interest is the differentiating and possibly hierarchical powers of the epistemic tensions, and we presume that they separately can implicate for example a narrow-minded science and knowledge production. PhD Education is but one site where these tensions have to be handled, translated at once into epistemic categorisations within PhD curricula and into other kinds of scholarly activities governing the lives of academics.

According to a recent European University Association [EUA] report (2010), the number of Doctoral Schools and similar have increased in a short period of time in Europe and now almost dominate as the organising principle. In Sweden, Doctoral Schools were initiated by research foundations in the 1990s, a decade later also introduced by the Government (Prop 2000/01:3; Swedish National Agency for Higher Education, 2000), a period marked by recurrent regulations of funding, organisation and monitoring performances (Prop 1997/98:1; SOU 2004:27). The policies are also characterized by some hesitations in how much and in what directions PhD Education should be going, even so, in many of the policies there is outspoken critique on overregulating research activities like this. The counter-arguments used have for example been drawing on university traditions, scientific freedom and autonomy, as well as earlier models of socializing and training PhDs into disciplines, but also the risks of overproducing PhDs and neglecting the importance of fostering a high-qualified research population.

The reforms have received some attention in higher education research (e.g. Boud & Lee, 2009; Kehm, 2009), recently also as a distinct managerial governance or European governance (Baschung, 2010; Kottmann, 2011). They are also a part of the recent pressures of scientific and societal relevance and quality in higher education and the politics of the European University (e.g. Olsen & Maassen, 2007; Popkewitz & Rizvi, 2009) and towards a more open and accountable position, a “post-academic science” (Ziman, 2000), or “Mode 2” (Gibbons et al., 1994; Nowotny et al., 2001) towards society. Notwithstanding, educational science (utbildningsvetenskap) also has a “pre-academic” life, and has been shaped by its close relation to the teaching practices and professions, school politics and teacher education, etc. Nowadays, it is integrated in the academic system but also a highly fragmented, multidisciplinary field. It is possible that this makes PhD Education more open for regulation and coordination, trans-disciplinary and trans-scientific formations (Knorr-Cetina, 2005, p. 191) where peers and the standards of the disciplines and scientific communities evolving, as well as managerial staff or routines, publication standards etc., take part in setting the rules and codes of conduct of the epistemic organisation of PhD Education.

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### **The most demanding interdisciplinarity: “The two cultures”**

Interdisciplinary research between natural sciences has always been important. The same can be said about interdisciplinarity internally in and between social sciences and humanities. This paper will discuss interdisciplinarity bridging natural and human sciences. Why is this so rare? Why are human sciences much more concerned with “interdisciplinary research” than natural sciences? Why do science studies mostly look at natural science from the outside? And then: What would genuine interdisciplinarity between natural and human sciences look like?

This is a big and controversial topic. In the present paper I will just try briefly to sketch a fruitful approach. I will argue that the knowledge of the natural sciences is no less fundamental to our world view than that of the human sciences. It may even be held that research in natural science has contributed more of radically new knowledge about the world, and thus more of radical change in our world view, than have research in human sciences during the last half millennium. My approach is contrary to an instrumental understanding of natural science and its social role, which is common in contemporary science studies. A classical source of this instrumental view is the Frankfurt School of philosophy and social science, Horkheimer, Adorno, Marcuse, Habermas and others.

With a couple of examples I will show how such a one-sided instrumental interpretation is insufficient for an understanding of the role that new natural science knowledge plays in cultural developments and political decision-making.

### **Eugenics**

The eugenics movement of the late 19<sup>th</sup> and early 20<sup>th</sup> centuries was inspired by the application of Darwinian evolution to the human species. Eugenicists feared that new social policies taking care of the poor, ill and disabled would weaken the role of natural selection. Disadvantageous hereditary characters would accumulate and lead to degeneration. Such fears were strong not least among scholars in the humanities and social sciences. But classical Darwinism lacked a theory of biological heredity. The new discipline of genetics developed

during the early decades of the 20<sup>th</sup> century showed that fears of degeneration were much exaggerated and that the social policies proposed by eugenicists lacked a basis in sound scientific knowledge. The role of new scientific knowledge in the fall of eugenics has been widely neglected in the historiography of eugenics. This bias has political importance since the perceived history of eugenics shapes present policies on the use of gene technology on humans.

### **Environmental science**

Recent controversies in environmental science and politics also suffer from the one-sided instrumental interpretation of natural science. Acid rain was a big environmental scare for about 30 years, from ca. 1970 to the turn of the 20<sup>th</sup> century. It was feared that acid pollution from Great Britain and Central Europe would rain on Scandinavia and lead severe damage to forests and kill fish. Forest damage was the main concern. The decisive argument that made Germany and other countries accept costly restrictions on polluting emissions was the threat of large scale “Forest death” (“Waldsterben”). This hypothesis was doubted by most forest scientists all along and it turned out to be false. But, the fatal effect on fish in many lakes and rivers was confirmed. It is thought provoking that most studies of the acid rain controversy describe its success in curtailing emissions of acid air pollution without taking into account that the crucial political argument “Waldsterben” was false. Instead they have tended to take “Waldsterben” as an established fact. Clearly a widely shared belief can be an important cause in politics. But it still makes an important difference whether the belief is true or not.

When the International Panel on Climate Change (IPCC) was established in 1988 the successes and problems of the acid rain controversy was an important background experience. Three working groups were set up: one for investigating the causal geophysical mechanisms of global warming and measuring its magnitude; a second one for studying the effects of the warming, ecological, agricultural, medical, economic, etc. ; and a third one for finding means to prevent or adapt to the warming. The acid rain experience had shown how important it was to keep different questions apart. This was necessary to protect both the integrity of science and the rationality of politics. – But mass media have not been capable of supporting a well informed public debate. This has become a serious problem in climate politics, like it was in the acid rain debate. Claims with little or no scientific validity are presented on par with the best scientific knowledge and judgments, and ideological opinionating tends to drive out rational fact-based debate.

### **The Frankfurt School**

In conjunction to these examples I will briefly consider the philosophical and historical background to the present neglect of the impact of natural science knowledge on cultural and political development. It appears that the kind of instrumental and pessimistic, anti-enlightenment view of natural science that was formulated for instance by the Frankfurt School during World War II and popularized with the student revolution of 1968 has been an important ideological factor in shaping present view in science studies as well as the politics of science.

To conclude: Effective interdisciplinarity between the natural and the human sciences is probably harder to achieve now than ever before. Increasing specialization in education as well as research has gradually reduced mutual understanding. But our ability to meet two main challenges, environmental politics and human reproduction, appears to be crucially dependent on such broad interdisciplinarity. Science studies — history, philosophy and sociology of science — have an important task in revealing harmful myths and providing adequate concepts.

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## **Gregory Rutledge**

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### **Judging the Word: The Interdisciplinary Abyss Between Law and Literature**

In American law schools, it is taught that the interpretation of statutes—and cases, contracts, and other documents—traditionally, and regularly, should follow a rather strict functionalist approach: literal interpretation that follows the clear meaning of the legislature is binding. This literal or plain meaning rule “dictates that statutes are to be interpreted using the ordinary meaning of the language of the statute, unless a statute explicitly defines some of its terms otherwise. In other words, the law is to be read word for word and should not divert from its ordinary meaning.” In its sum, the literal meaning both exalts the Law as above judicial subjectivity while simultaneously reducing it to a discrete material artifact that is “literal” and “plain.” The contradiction is reconciled on the grounds that lawmakers themselves have studied the Law and thus may wield its material elements objectively.

Literary scholars, predicated upon the premise of creativity, prefer a canon of interpretation that is diametrically opposed: creativity is transcendence, and literal or plain meaning objects are to be avoided as affronts to true literary aesthetics.

Curiously, and tragically, the law and literature canons of judging the word, despite their clear antithesis, have nevertheless been uniformly aligned in regard to the Other, especially those marked by racial/ethnic difference. Although the civil rights movements of the 1960s forced open the disciplines, the Other remains at the margins of both disciplines, which have now reconfigured to strategically include the nominal presence of the Other in a new legal and literary order.

Against this dilemma, critical race theory founders—most notably Derrick Bell and Richard Delgado—sought to introduce into the interpretation of the law extra-legal canons of interpretation rooted in storytelling and the Humanities. Bell’s classic statement is a Harvard Law Review journal article. In it he argued—sacrilege to both the legal and African-American communities—that *Brown v. Board of Education*, the 1954 case that ended de jure segregation and vaulted Thurgood Marshall to the U.S. Supreme Court as its first non-white-male member, emerged not from an interest in racial justice, but from America’s Cold War interest.

CRT has since become a critical lens deployed by legal and literary scholars in a variety of forms. Bell himself wrote fables (fiction) and commentary. Patricia Williams’ *Alchemy of Race and Rights*, a widely influential text among literary scholars, brilliantly folds autobiography into discussion of the racism lurking within legal concepts and methods found in cases, statutes, and contracts. Paul Butler’s watershed law review article on criminal sentencing deploys hip hop aesthetics as its guide. Of course, courses and texts on law and literature have abounded.

Despite these developments disciplinarity has prevailed. Less surprising than the fact that law schools do not embrace literary techniques for interpreting law is the remarkable degree to which CRT has not been widely adopted by literary and cultural studies scholars.

This talk would focus on an omission shared by legal and literary CRT proponents: while the conceptual frames have been oft-critiqued, the literary techniques used by judges in their cases have not been examined. For the first part of my talk, I propose to map out, in more detail, the

frame outlined above. Then, drawing upon my legal and literary backgrounds, and my present class in race, law, and literature, I propose to interrogate the prevailing disciplinary abyss (a place for mutual destruction), argue for the role of interdisciplinarity, and give an example of how our failure to read the literary devices deployed in one of our most famous landmark cases on race has enabled its insidious essence to continue to this day decades after the U.S. Supreme Court literally—plainly—overturned it.

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Thinking about Scientific Disciplines

What models are available for thinking about scientific disciplines (their emergence, their existence, their decline) and do these models point to any consensual vision of their logic? In historical and philosophical studies of scientific discipline formation it is rare to find any support for essentialist models that propose a common object of study as being at their base, and common methods are more likely to be read as a result of discipline formation than as its source.

In this paper I propose to review some of the models of scientific disciplines that can be deduced from the literature in history, philosophy and sociology of science. Indeed, one surprising thing to note is the lack of a consistent body of theorizing about this particular question as an independent question. Considering the contributions of authors like Robert Kohler, Timothy Lenoir, Pierre Bourdieu, and Thomas Kuhn as well as my own work on the relationship between pharmacy and chemistry, I will consider the various elements brought into play, be they social, institutional or epistemological.

In this presentation, I will also consider the cluster of neighbouring issues like the relationship between professionalization and discipline formation, to see what lessons can be learned, for example, from the much more developed field of the sociology of professions, as well as considering why this question has enjoyed so much more attention. Finally, I will turn to the literature on nationalism that inspired the approach adopted in *Chemistry, Pharmacy and Revolution in France*, to reconsider what can be learned from the metaphor of the nation. In light of the references cited above, I will conclude with a reflexive turn, posing the question of what this issue and its exploration can tell us about our own disciplines, broadly construed as science studies.

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Looking with what you are looking at: Gregory Bateson and Terrence Deacon as healers of the great divide between natural and human science.

On the back cover of Gregory Bateson's book "Steps to an ecology of mind" (1972), he is described as fieldwork anthropologist, psychiatrist and zoologist. Wikipedia (21.3.2012) adds linguist, visual anthropologist, semiotician and cyberneticist. Several more could have been added. I think it will be hard to find a researcher who deserves the label interdisciplinary or multidisciplinary more profoundly than Bateson. But in his last book "Mind and Nature" (1979), on page 8, he states: "I have been a biologist all my life." This is somewhat puzzling if you look at his bibliography which contains very few items that would count as biological research papers, and also, if you consider the fact that most biologists ignore his contributions to biology.

Bateson's first completed disciplinary affiliation was anthropology, and many anthropologists like to reckon him as basically an anthropologist who later moved into other fields. But Bateson's upbringing was very much in a milieu of biology under the guidance of his famous father, the geneticist William Bateson. And Gregory became a kind of "native" biological scientist before turning to the study of cultures. The tension between biology and anthropology came to dominate much of Bateson's thinking, and also his intense preoccupation with a whole range of dichotomies: Mind and Nature, the world of the living creatures (Creatura) versus the world of nonliving things (Pleroma), circularity versus linearity, epistemology versus ontology. The long lists of seemingly contradictory dichotomies might be approached like a problem to be solved for someone trying to make order of chaos. But for Bateson paradoxes were not a threat to order. Paradoxes may be a threat to logic and logically designed machines, but not to life since paradoxes lie at the heart of living systems.

"I am arguing that there is an important ingredient common to comfortable human relations, humor and psychotherapeutic change, and that this ingredient is the implicit presence and acceptance of the paradoxes...The alternative to the freedoms introduced by paradox is the rigidity of logic." (Bateson in Heims 1993:109)

One of Bateson's important contributions was a new appreciation of the importance of paradoxes. This also translated into his attitude towards disciplines. He felt that anthropology lacked in rigor and traditional biology in imagination. Bateson needed both, not as a compromise or middle ground between the two poles, but rather as a combination of extreme rigor with extreme imagination. The result was at times a kind of oscillation. In the documentary film "An ecology of mind" (2011) by Nora Bateson about her father, there is a footage of him from 1978 where he says to a friend:

"I'm endlessly fighting a battle with people, you know, who want to throw the intellect out and think of nothing but the heart. And when you fight that battle you sound like an intellectual. But when I meet intellectuals, I find myself fighting the opposite battle."

The career and intellectual achievements of Bateson presuppose some rare cognitive talents, and that in itself often provokes people who find comfort within the boundaries of traditional

disciplines that they think should be accessible through normal talents and hard work. It is something suspect about realms of knowledge inaccessible to ordinary, hard work.

Bateson found a soul mate in the mathematician Norbert Wiener whom he met at the Macy conferences. These ten conferences may be among the most extraordinary interdisciplinary events in academic history, and they are wonderfully described and analyzed by Steve Joshua Heims in his book from 1991 “Constructing a Social Science for Postwar America. The Cybernetics Group, 1946-1953”. Heims writes:

“Wiener and Bateson were both willing to translate exact theorems of communication engineering, physics, and formal logic into relatively loose verbal, formal statements – which they would then extend and apply in a heuristic way to other areas of science, although most scientists frowned on such practices. Having accepted the legitimacy of the human endeavor to understand the world in a more than piecemeal, “departmentalized” way, they had necessarily to take into the bargain paradoxes, incompleteness, vagueness, and tentativeness. Narrow specialization had been sine qua non of science for generations; consequently, Wiener’s and Bateson’s efforts to describe the world and ourselves in a comprehensive, holistic way and yet function as scientists were not taken seriously by colleagues and tended to isolate them.” (Heims 1993:107)

As an à propos to this, how Bateson left anthropology is noteworthy. He wanted to continue his visiting professorship in anthropology at Harvard in 1956 but was refused renewal (Heims 1993:147), and a more “disciplined” anthropologist got his position. He never returned to work in an anthropology department.

I reckon Bateson’s willingness and ability to swift changes between ontological questions (“what he is looking at”) and epistemological questions (“what he is looking with”) as both his greatest strength and his greatest weakness. Strength because he, through his multiple descriptions, forces the reader to live and experience some very abstract and otherwise quite inaccessible ideas – weakness because his restless style allows him to jump away from sometimes difficult and unsettled questions that would have become prominent had he rested for a longer time within one perspective.

A researcher that has pursued many of Bateson’s paths with greater rigor and tenacity from a biological point of view is Terrence Deacon, not least in his book “Incomplete nature: How mind emerged from matter” (2011). This book can be seen as a kind of update of Bateson’s project. But where Bateson mostly tried to make biological thinking relevant for social and cultural science, Deacon tries to make culture or more narrowly intentional phenomena (or with Deacon’s own, more generalized term *entional* phenomena) relevant not only for biology but also for physics (notably thermodynamics). Like Bateson, Deacon places a paradox at the heart of life but also at the heart of certain non-living processes. The paradox is that only constraints can create possibilities, and that new complexities can only emerge from possibilities that are not realized. Where Bateson discussed “mind and nature”, Deacon discusses “mind and matter”. This may have even wider implications for many sciences than the cybernetic thinking introduced by Bateson had to social science and psychology.

The last topic I would like to comment on is the conditions (or more correctly, lack of conditions) in Norway for pursuing this kind of radical interdisciplinarity.

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A fruitful interplay between cultures of research supervision?

An important part of university teaching and research obligations consists in supervising doctorate and master students. With practically no requirements as to formal education or training, research supervision may be seen as part of everyday activity inside institutions, where educational practice is passed on or inherited based on tacit knowledge.

The Group for Faculty and Curriculum Development at the University of Oslo offers a 25 hours course on research supervision for faculty members. The course recruits participants from all eight faculties at the university, and participants include senior tenure faculty members, recently appointed academic staff, as well as research fellows. The course covers supervision of doctoral candidates as well as master thesis students.

Before a course starts, all applicants are asked to fill in a questionnaire about how various aspects of supervision are handled at their own unit. This serves as a preparation for later cross-sectional group discussions in the course, which may make the participants aware of differences between and possibilities within varying supervision cultures.

This paper is based on answers from 232 questionnaires compiled from 12 courses arranged between 2004 and 2011. The analysis shows variation between faculties, among other things when it comes to recruitment of candidates, frequency of supervision meetings, relatedness of candidate's research problem to research field of the supervisor, challenges in being supervisors.

Within the humanities, there is emphasis on candidate research as a liberating, self-actualizing endeavor, and individual ownership to ideas presented in the candidate's thesis. But expectations about originality and independence in thinking, may in some cases lead candidates into isolation, at the risk of slower progressions or even abandoned projects.

Within the hard sciences, candidate research is more commonly carried out as part of a joint activity in a research team, where a supervisor may co-author ideas presented in candidate's thesis. The candidate may receive day-to-day support, and the work may be adjusted to a strict timetable. But if candidates get involved in skill-based, employability-driven tasks, they may not sufficiently be challenged to develop new ideas of their own or end up as independent researchers.

Rather than looking for answers to substantiate "The Two Cultures", this paper tries to identify some rare cases, where supervisors specifically apply strategies to avoid pitfalls of their own culture, i.e. by giving candidates more ownership to their own research question within the sciences, or by establishing more support for the candidates' research work within the humanities. In doing this, the supervisors may benefit from knowing about one another's cultures. The paper discusses possible implications for the training of research supervisors.

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Sitting between stools: conservation research between the Humanities and Physical Sciences

If we are to believe the academic literature for conservation and cultural heritage studies that has streamed from our colleagues over the past thirty years, those who contribute to conservation research are working in a self-consciously interdisciplinary fashion. However, if this were so, then there would be less difficulty today in moving between humanities-based disciplines and the physical sciences, as is required on a daily basis for a conservator.

This paper will address the inherent difficulties, both theoretical and practical, of interdisciplinary research as it applies to studies related to the conservation of culturally significant objects and paintings. It will also address potential solutions, proposed by those in Conservation Studies, UiO, who are actively engaged in efforts to diminish tension between researchers who contribute to conservation research. Examples will be drawn from two cross-disciplinary projects: the first devoted to Munch’s Aula paintings and the other devoted to the university’s extensive collection of late-medieval polychrome sculpture.

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**The good, the bad, and the ugly of cross disciplinary science and popular science**

Outreach and popular science activities are the main windows where the public can get insight into ongoing academic research. However, popular science books with a natural science focus have a relatively small market share in Norway and the annual number of titles is disproportionately small compared to the number of natural scientists. Cross disciplinary approaches to popular science has both the potential to increase the interest in this type of outreach (e.g. by putting specialized results in a different or relevant context) in addition to showing the public why cross disciplinary research is regarded as important in both academia and funding agencies.

Based on my experience from two cross-disciplinary popular science books (one about natural disasters, the other about mountains), I will discuss the main challenges and pitfalls of cross-disciplinary outreach. The conclusions will be compared with the experience I have as a researcher in a cross-disciplinary geology-physics Centre of Excellence. Central themes include: 1) The pain of becoming a cross-disciplinary researcher. 2) Science versus popular science. 3) What constitutes as ‘cross-disciplinary’ in science and popular science? 4) The ‘coffee-table’ approach versus the ‘holistic’ approach to cross disciplinary popular science. 5) After crossing the disciplines: The reception in academia and among the public.

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**The sociology of the history of science**

In 1913, George Sarton published the first issue of the journal *Isis*, the first journal explicitly devoted to the history of science. On the front cover of this issue, Sarton listed *Isis*' patrons, among whom Emile Durkheim. In his opening essay, Sarton put forward his view on the identity of a yet-to-be-established scientific specialization. He defined his specialization as a "psycho-sociological investigation". A former Ph.D. student of Sarton, named Robert King Merton, became Associate Editor of *Isis* in the late-1930s, first responsible for "the social aspects of science" and, as of 1942, for "sociology".

In this presentation, I will argue that the evolution of *Isis* sheds light on the disciplinarization of the history of science. My argument is based on the idea that specialized journals fulfil a key role in scientific disciplines. They facilitate the formation of networks of potential contributors; these journals and the publications therein 'control' the formation of scientific disciplines. Changing communication practices in journals may therefore shed light on the evolution of scientific disciplines. I will use a case-study of *Isis*, which is about to celebrate its 100<sup>th</sup> anniversary, to clarify this relationship.

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The interdisciplinary construction of socialization: the archaeological heritage of Uruguay as a case of study

Socialization processes requires an integrated and multivocal perspective to cope with its inherent complexity. This complex phenomenon helps to build the identity of a society in the interaction with science. Socialization of Uruguayan archaeological heritage allows the creation of a shared memory according to the historical processes of Uruguay. A responsible attitude involves the recovery of an inclusive past which may increase the archaeology's role in society.

Recent Uruguayan archaeology has focused on a number of research topics such as Historical Archaeology, Maritime Archaeology and Landscape Archaeology. We have studied the socialization of archaeological heritage in Uruguay and the definition of its dimensions: scientific practice, scientific education, scientific communication, scientific mediation, governance and evaluation. All approaches were analyzed from an interdisciplinary perspective in order to provide a joint diagnosis of the process of adoption of new facts by society.

Three examples of archaeological findings, of great cultural relevance for Uruguayan life in the beginning of the XXI Century have been analyzed: (i) the adoption and understanding of complex archaeological structures named "cerritos de indios" (ii) the confirmation of the

presence of Indian culture in Uruguayan life and (iii) the development of maritime archaeology with its consequences on National way of life and thought.

This paper evaluates interdisciplinary strategies as the grounds on which scientific knowledge can be build up. It analyzes the viability of a multivocal approach to study some social processes around the communication of scientific knowledge related with Uruguayan archaeological heritage.

As a result our study encourages the discussion on the influence of the context of archaeological findings while analyzing the development of the subject matter. It focuses on the discussion on the future of archaeological heritage in Uruguay. We wish to promote social participation and democratization, given that scientific output has multiple impacts on the complex web of interests of contemporary society.

This is a exploratory and qualitative study which considers written and oral sources. Interviews were applied to different social actors along with participant observation. Data was analyzed through survey sheets tailored in each case according to the chosen theoretical framework.

With these tools, socialization becomes a new category and interdisciplinarity provides the axes for a new way of thinking and knowing our cultural heritage. The results brought by this research helps to identify a set of actions to be developed in that sense.

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**Interdisciplinarity in higher education: Espacio Interdisciplinario from the University of the Republic (Uruguay)**

The University of the Republic<sup>5</sup> in Uruguay has transformed its academic structures in order to facilitate and promote new interactions between approaches, disciplines and subdisciplines. The creation of the Espacio Interdisciplinario (EI, Interdisciplinary Space, 2009) is a major and long-term effort promoted in the Second Reform held at this University. The interest to investigate the characteristics of the interdisciplinary groups is highlighted among the activities developed by EI and its Academic Unit. This paper presents the progress made in that direction focusing on the role of institutionalization and how far has the promotion of interdisciplinarity gotten in the context of higher education in Uruguay. The EI is a new academic structure and implies some novelty in the way it promotes interdisciplinarity, trying at the same time not to impose a definition of what it should entail.

To fulfil this objective it was developed an academic research program entitled “Situación actual de la interdisciplina en la Universidad de la República”<sup>6</sup>. It aims to diagnose the current state of interdisciplinarity in the University of the Republic, and seeking to analyze academic groups and systematize their characteristics in the Uruguayan context.

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<sup>5</sup> Universidad de la República (Uruguay).

<sup>6</sup> “Current situation of interdisciplinarity in the University of the Republic”.

The definition of the concept “interdisciplinarity” presented a challenge to the development of this project. Therefore, the Academic Unit sought to build this term from the researchers’ perceptions during the process of research. In that sense, an exploratory research design was built around the characterization of “interdisciplinarity” to give response to this matter.

Semi-structured interviews were held with members of the funded interdisciplinary programmes by EI since 2009: interdisciplinary groups, centers and experimental programmes. Interviews emphasized the practices and experiences of academics according to the three University functions: research, teaching and extension. Data was analyzed using an iterative process which classified their perceptions and construct the dimensions and categories *ex post*.

In the course of this research there were surveyed many characteristics which established certain similarities to those encountered in previous studies and the scientific literature. However, the features registered in the Uruguayan academy continue to shape some new aspects with direct relation to various areas of interdisciplinary work.

Some of those features are related to the kind of interaction between disciplines and in the way researchers deal with challenges of communication. This is associated with different metaphors such as cycle, construction and spiral. On the other hand, researchers considered that institutionalization facilitates the consolidation of interdisciplinary working groups and contributes to build its identity as it gives continuity and stability to their work.

Finally, it was also confirmed that some categories cut across all interdisciplinary practices including: complexity, the link with the disciplines, and the type of dynamics that are developed by an interdisciplinary group.

Interdisciplinary practice is highly experimental, as it grows and changes presenting a considerable variability depending on the disciplines involved and the modalities of interaction. The ultimate goal is to promote interdisciplinarity in its various forms throughout the Uruguayan academic community as a whole, facing its intrinsic complexity and extrinsic challenges, building adequate institutional policies.

At present Interdisciplinarity appears as an almost necessary condition for high performance research: all subject matters, all disciplines in order to go further, must ally with other disciplines, must change the initial perspective and therefore inevitably become “Interdisciplinary groups”. Such seems to be the immediate future of the Universidad de la República.

