BOOK OF ABSTRACTS

International Conference

RISKY
ENTANGLEMENTS?

CONTEMPORARY RESEARCH CULTURES IMAGINED AND PRACTISED

JUNE 9-11, 2010, VIENNA

Risky entanglements?
Contemporary Research Cultures Imagined and Practiced

Recent key macro studies agree that scientific research is increasingly entangled in various societal rationales. On the one hand, these analyses should be understood within the context of the growing importance attributed to scientific and technological innovation for shaping contemporary societies. On the other hand, society's readiness to contribute to an innovation-friendly climate is considered a key-asset for materializing this imagined progress. For both issues, the human side of science, thus researchers and their way of doing research, their values and their readiness to engage with both science and society, is perceived as essential.

As this unfolds on a global scale, it is interesting to observe within research policy and science institutions the convergence of various discourses that stress and imagine what seem to be the key values or myths guiding research today: excellence, accountability, mobility, flexibility, ethical conduct, societal relevance or application orientation, to mention but a few. However, far too little analytic attention has been devoted to (1) how these broad and ostensibly universal notions impinge on different work and knowledge production cultures, (2) how specific local histories and contingencies play out in practice, (3) how these global changes get refracted locally and personally, and (4) how all this re-frames what being a researcher today actually means. This lack seems astonishing given the importance the 'human factor' is attributed in current policy discourses around innovation.

This conference invites contributions that address change and continuity of work and knowledge production cultures in research, and ask in which processes ethical, societal and economic rationales shape these very cultures. Of particular interest are contributions that are combining more refined empirical analyses with broader theoretical frameworks of change. By combining works that address different regional-historical contexts and different scientific fields, the conference's explicit goal is to open up comparative perspectives, thus contributing to a broader understanding of contemporary research cultures.

Conference Themes

Research Cultures and Regimes of Innovation

How do academic and economic/corporate logics intersect and interact in today's research environment? Which new hybrid institutions between "academia" and "industry" arise and how is knowledge production structured in these contexts? Which roles do patents and the ownership of knowledge play in this? What are the contemporary specificities of spaces and places where knowledge is actually produced and communicated?

The Social and Temporal Organisation of Research

How has the social and temporal organisation of research changed? Which new roles and responsibilities for researchers come along with these changes? Which broader institutional changes frame these new forms of temporal and social organisation? How does this impinge on research practice?

Ethics in (Research) Practice

How do ethical considerations figure in actual research processes? Where are spaces and places where ethics is pondered and debated? How do institutional "ethical" processes (e.g. in journals or committees) impinge on research culture and practice? What are the intentions and the effects of formulating and codifying what good scientific practices are? What are the tensions arising between a global vision of science and local ethical understandings?

Biographies and Careers in Science

How do scientists envision and plan their careers and how do institutions shape this process? How "transgressive" are careers to other fields of employment? In how far have scientific biographies changed over the past decades, and how does this impinge on actual research practice? Which role do social, ethical and economic considerations play in these processes?

Rituals of Assessing Academic Work

How do new notions of quality and the rituals of ascribing and monitoring it reshape academic biographies and actual research practice? Which new forms of stratification are introduced in particular through audit and ranking practices? Does academic audit contribute to transparency and social robustness, or does it produce closure towards society?

Socialising Future Researchers for a New Kind of Science?

How are the professional norms and values of one generation of scientists transferred to the next? How are changes in culture and practice of the sciences reflected in the socialisation of young scientists? What role do ethical as well as socio-economic considerations play in these socialisation processes? Are there any ruptures in this process?

Economies of Promise: Imagined Futures as a Resource of Science

What role does the ever-increasing importance of promised future societal benefit play in scientific practice? How do these envisioned socio-scientific futures change how scientists approach problems and structure their research? Which institutional constellations are relevant in this economy of promises? Do particular funding policies have an impact on economies of promise and imagined futures?

Public Debates and Research Cultures

How do broader societal debates influence research practice? How does the increasing media coverage of science and scientists impinge on their self-understanding and their actual work? What images of scientific work and research practice arise from media representations of research in science and the humanities? Does public engagement influence research cultures, and in which processes?

Conference Location

○ Albert Schweitzer Haus
Schwarzspanierstraße 13
1090 Vienna

Additional location for parallel sessions:

○ Edu4you Bildungsakademie
Frankgasse 4 / Entrance: Garnisongasse
1090 Vienna
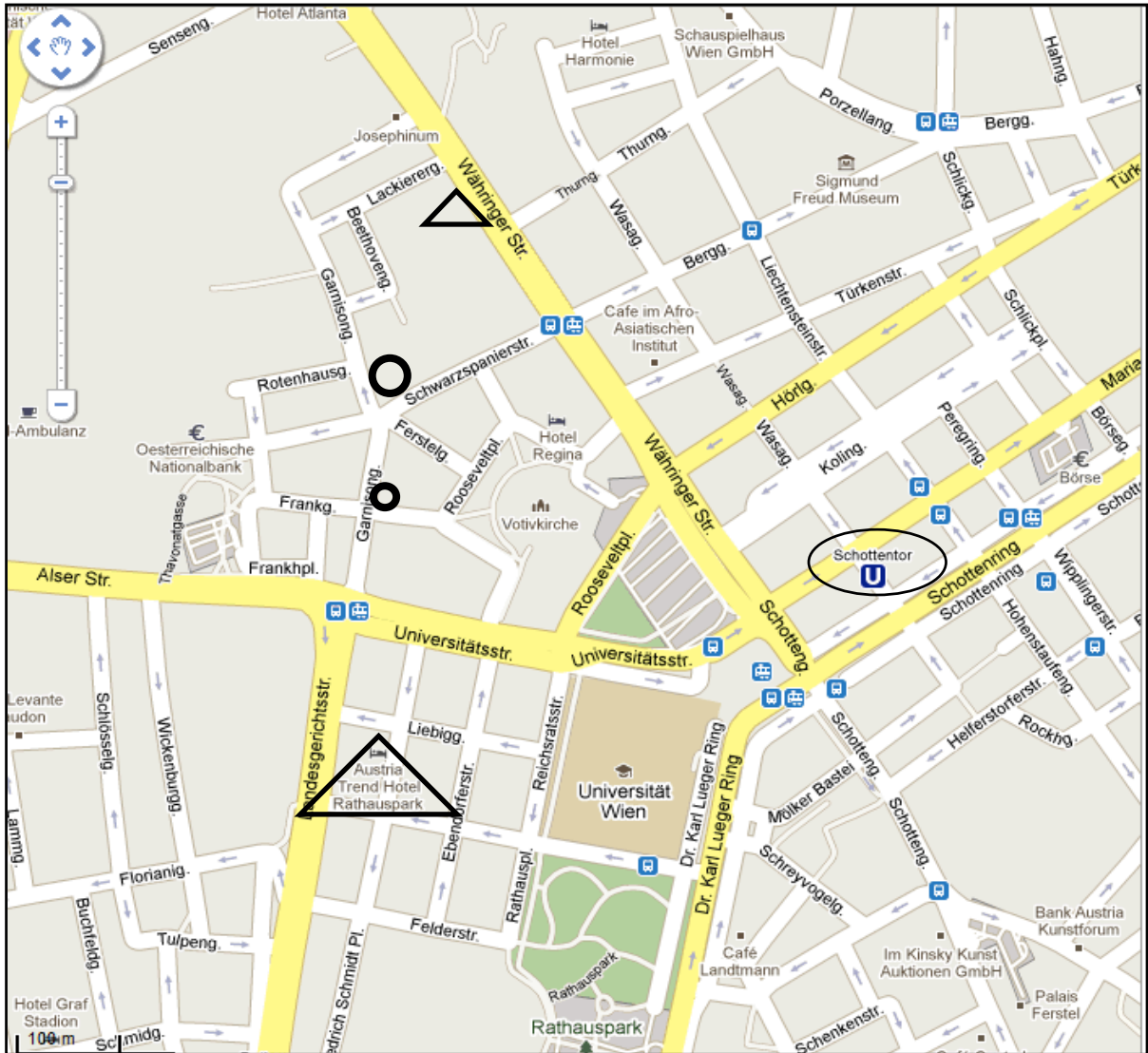
△ Hotel Rathauspark
Rathausstraße 17
1090 Vienna

△ Hotel Bleckmann
Währinger Straße 15
1090 Vienna

◯ Nearest subway station:
Schottentor: Line U2

Public Opening Event

Contemporary research systems undergo profound changes in the ways academic research is conceptualised, observed and described, as well as concerning the roles research is expected to play in the development of contemporary societies. Idea(l)s of new public management have strongly entered academia and are visible on several levels: internal hierarchies are strengthened, accountability systems put in place, and research work is increasingly temporalised and projectified – to name only some of the most central changes. This is inextricably linked with a re-definition of the value systems supposed to guide researchers' actions, linked to key notions such as mobility, excellence or accountability. However, the precise values and aims associated with these catchwords vary strongly, and a more thorough debate on how they re-shape living and working in academia is lacking. To have such a debate however seems crucial to arrive at a more fine-grained understanding of what it means to be a researcher today.

In current policy debates around these issues, often the past is reconfigured as imperfect, inefficient, not up to the tasks research should fulfil and as to be replaced by a better, more efficient future. However, these bright futures seem to come along with very strict normative frameworks. The 'price' for those who want to participate is to strictly comply to 'the new rules'. This explains why we use Huxley's "Brave new world" in the title for the event. By adding a question mark, we would like to capture that most debates about contemporary changes in research run in a rather polarized manner between utopian claims of where the new systems will lead us to and more dystopian visions of the past - or vice versa as people retreat to stories about the 'golden past' to criticize what they see as unattractive presents and futures in living and working in research. Both polarisations do not seem very fruitful ways of engaging with what happens in contemporary research.

Most debates and visions on these topics gravitate around 'human resources' and how they can best be made to think and work creatively. Our aim in the discussion is to move beyond such 'faceless' notions, and to put the people living and working in research, and how they experience the changes sketched, back on the centre of the stage. Central issues covered in the discussion will be:

- Shifts in the ways we observe/describe/represent the research system: Indicators, counting and accounting exercises, rankings, and impact factors, and how they impinge on the self-observation of scientific institutions and individual researchers. Does the 'counting of impact' and constant competition replace other sense-making stories available to young researchers, and how does this impinge on the attractivity of research careers?
- Time as a central dimension of how research work is re-structured: As researchers ever more strongly feel caught in a 'treadmill', where is the time to reflect beyond the concrete project at hand, or to ponder ethical issues? Does the increasing acceleration and temporal parcelling of research allow for a sustainable production of truly innovative knowledge, or does it just maximise the production of ever more short-time-oriented and uniform output?
- The tension between an increasing massification of research and the attempts to single out 'excellent individuals', who may buy out of many of the conditions sketched above: Which dynamics of competition does this create, and how does this change the ways in which knowledge is produced?

Conference Schedule

<table>
<tr><td colspan="3">OPENING EVENT
Wednesday, June 9, 2010 / 18:00 / Main Hall</td></tr>
<tr><td colspan="3">Brave new research worlds? Living and working in contemporary research
Panel discussion with Philip Campbell (Nature), Ulrike Felt (Univ. Vienna), Helga Nowotny (ERC),
Giulio Superti-Furga (CeMM), Ruth Wodak (Lancaster Univ.)</td></tr>
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<tr>
<td rowspan="9">Thursday, June 10, 2010</td>
<td colspan="3" align="center">MORNING SESSIONS</td>
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<td>9:00 – 10:00
Plenary</td>
<td>Main Hall</td>
<td>Responsibility lost in translation? New public management of research as ontological politics
Ulrike Felt / University of Vienna (A)</td>
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<tr>
<td colspan="3" align="center">Coffee break</td>
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<td rowspan="5">10:30 – 12:30
Parallel Sessions</td>
<td>Main Hall</td>
<td>Collaboration and the social organization of research work Chair: N. Vermeulen

Delegate or perish: Competitive federal grants and the current organization of research and training in the biomedical sciences in Canada
A. Salonius / Chemical Heritage Foundation Philadelphia (USA)
Scholarly collaboration, affective labour and digital technologies
S. Wyatt, S. Dormans and S. Antonijevic / Virtual Knowledge Studio and Univ. Maastricht (NL)
Growing into academic landscape: PhD students in molecular biology
A. Červinková / Academy of Sciences (CZ)
Latent individualities, latent collectivities: Engaging with future and present forms of individuality and collectivity in life science research
R. Müller / Univ. Vienna (A)</td>
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<td>Chapel</td>
<td>Growing into science Chair: M. Penkler

Young. Academic. Life scientist. Inventing ways of manoeuvring uncertain research landscapes
L. Sigl / Univ. Vienna (A)
When the "old world" disappears…. The young Polish scientists mobility and the modification of hierarchical relationships in life-science environment
I. Wagner / Univ. Warsaw (PL)
Mobility, corporate funding and the capitalist policies of academic research
J. Hunsinger / Virginia Tech (USA)
Growing into what? On the (un-)disciplined socialisation of young researchers in transdisciplinary research
A. Schikowitz, J. Igelsböck and T. Völker / Univ. Vienna (A)</td>
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<td>Edu4you</td>
<td>How engagement changes research cultures and practices Chair: M. Fochler

The risky entanglement of ELSA: Experiences and prospects
M. Radstake and A. Nelis / Univ. Nijmegen (NL)
Open labs – biotechnology labs as a site for speculative forms of public engagement
T. Kerridge / Goldsmiths, Univ. London (UK)
Engaging with sustainability technologies and doing STS: Risky entanglements?
E. Pauwels / Woodrow Wilson International Center for Scholars (USA)
Transient entanglements: Geographies of knowledge brokering
M. Meyer / MINES – ParisTech (F)</td>
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<tr>
<td colspan="3" align="center">Lunch break</td>
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Thursday, June 10, 2010			**AFTERNOON SESSIONS**
	14:00 – 15:00 Plenary	Main Hall	**Out of time?** **Some temporal dimensions of doing and organising knowledge work** Lisa Garforth / Newcastle University (UK)
			Coffee break
	15:30 – 17:00 Parallel Sessions	Main Hall	***Temporalities in research*** *Chair: U. Felt* **The changing temporal orders of knowledge production and academic identities** O. Ylijoki / Univ. Tampere (FIN) **The politics of emergence: Public-private partnerships and the timescapes of frontier research and co-innovation in Apomixis technoscience** M. Hodges / Univ. Exeter (GB) **The projectification of science** N. Vermeulen / Univ. Vienna (A)
		Chapel	***Researchers' socialization in new knowledge production contexts*** *Chair: A. Schikowitz* **"Ethics-to-go": Reflecting ethics education in the life sciences in the Austrian higher education context** J. Allgaier / Univ. Vienna (A) **Interdisciplinary collaborations and pedagogy in doctoral training centres in the UK** D. Spencer and D. Mills / Univ. Oxford (UK) **Separate realms or productive entanglement? The research-teaching-nexus in scientific practice** R. Bloch and C. Würmann / Univ. Halle-Wittenberg (GER)
		Edu4you	***Economies of promise: Imagined futures as a resource of science*** *Chair: C. Schwarz* **Topologies of the future: An empirical study on imagined futures and present pasts of systems biology in Germany** M. Döring and R. Kollek / Univ. Hamburg (GER) **The role of societal valued promises in the development of toxicogenomics** M. Pijnappel / Univ. Nijmegen (NL) **Cycles of promises: Comparing nanoscience, agricultural science and chemistry** H. van Lente, L. K. Hessels and D. Schuurbiers / Univ. Utrecht (NL)
			Coffee break
	17:30 – 18:30 Plenary	Main Hall	**Who is the modern scientist?** Steven Shapin / Harvard University (USA)
			Conference Dinner

			MORNING SESSIONS
Friday, June 11, 2010	9:00 – 10:00 Plenary	Main Hall	**Affective accounting: Anecdotalizing scientific selves** Mike Michael / Goldsmiths, Univ. London (UK)
			Coffee break
	10:30 – 12:00 Parallel Sessions	Main Hall	*Rituals of assessing academic work* Chair: R. Müller **Auditing scientific expertise in a new culture of cognitive capital** D. Budtz Pedersen / Univ. Copenhagen (DK) **Making things count: The effect of research assessment on creating research outputs in the Czech Republic** M. Linkova / Academy of Sciences (CZ) **The changing credibility cycle of Dutch animal sciences: Struggles over relevance in academic agricultural research** L. K. Hessels, R.E.H.M. Smits and J. Grin / Univ. Utrecht (NL)
		Chapel	*Ethical and societal responsibility in research practice I* Chair: M. Strassnig **Research ethics committees: Constructing authority on good science & good governance** P. Jaspers / Univ. Maastricht (NL) **What is ethical and good scientific practice? Is it in danger?** D. Schmidt-Pfister / Univ. Konstanz (GER) **Talking ethics in technology controversies** A. Bogner / Institute of Technology Assessment (A)
		Edu4you	*Ownership practices in research cultures* Chair: T. Öhler **Cultures of knowledge and their corresponding cultures of authorisation** S. Böschen and B. Gill / Univ. Augsburg and Univ. Munich (GER) **Re-stabilizing entanglements of research and innovation processes in university-industry collaborations** N. Tofte Brenneche / Copenhagen Business School and Technical Univ. Denmark (DK) **Hacking genomes. A study of the ethos of open source science** A. Delfanti / SISSA and Univ. Milan (I)
			Lunch break

			AFTERNOON SESSIONS
Friday, June 11, 2010	13:30 – 14:30 Plenary	Main Hall	**Can they still stand on the shoulders of giants?** **Patents and the new spirit of capitalism in the life sciences (1970 - 2010)** Pierre-Benoît Joly / INRA Paris (F)
			Coffee break
	15:00 – 16:00 Parallel Sessions	Main Hall	*Differences that matter in ordering research* Chair: J. Igelsböck **Once upon a time in the East: from stagnant departments to entrepreneurial research groups?** D. Lorenz-Meyer, Univ. Prague (CZ) **Performing change and longing for continuity: Nanoscience and -technology as a field in the making?** S. Schumann, C. Schwarz and M. Strassnig / Univ. Vienna (A)
		Chapel	*Ethical and societal responsibility in research practice II* Chair: J. Allgaier **A whole new set of lab responsibilities? 'Responsible innovation' and its consequences for research practices** D. Schuurbiers, E. Fisher and H. van Lente / Univ. Utrecht (NL) and Univ. Arizona (USA) **Responsibility on the move. Societal responsiveness in shifting epistemic living spaces in the life sciences** M. Fochler / Univ. Vienna (A)
		Edu4you	*Conflicting orientations in research practices* Chair: T. Völker **Impact factor frenzy: Policies and practices of scientific publishing in the Czech Republic** T. Stöckelová / Academy of Sciences (CZ) **Between science and technology: multiple orientations within epistemic cultures** K. Kastenhofer / Institute of Technology Assessment (A)
			Coffee break
	16:30 – 17:30 Plenary	Main Hall	**Closing remarks** H. Nowotny / European Research Council

Plenary sessions

Responsibility lost in translation? New public management of research as ontological politics

Ulrike Felt / University of Vienna (A)
Thursday, June 10, 2010 / 9:00 – 10:00

Contemporary researchers live and work at the intersection of three different kinds of discourses, each attempting to normatively define what it means to be a researcher and to do research. Firstly, over the past years academic research has undergone major reorganisations of its institutional contexts, many of which may be subsumed under the term of new public management. Auditing structures have been put in place, new temporal logics guide academic lives and epistemic work (projectification, short term contracts) and there is a dense discourse on efficiency. This frames in important ways not only how researchers perceive themselves and what they do, but also how they do it. On institutional levels research work is increasingly defined in terms of (ac)countable entities, creating abstract normative ideals about desirable ways of being a researcher and doing research. This in turn increases the number of formal procedures researchers have to comply to as well as triggers a mode of continuous institutional and personal comparison and alignment. As a second discourse, we can observe simultaneously a growing demand towards researchers for doing "reflexive work", i.e. addressing ethical issues in their work and communicating with diverse societal actors. All this is meant to assure a better integration of science and society, or as critics would suggest, to appease potential societal critiques.

These two discourses and their accompanying materialisations encounter a third one, which is nourished by research communities' myths and ideals about how research should work as a knowledge producing enterprise and what conditions creativity needs. This third discourse is used to do boundary work against the two others.

Using the concept of ontological politics, the presentation will address how in different spaces – from the policy realms to the lab floors – different ontologies of the researcher/the research system, so different conditions of possibilities researchers live with, are created. This presentation will ask how these different ontologies are articulated in researchers' practices and how their contradictions impact on the way responsibility can be addressed in contemporary research.

Out of time? Some temporal dimensions of doing and organising knowledge work

Lisa Garforth / Newcastle University (UK)
Thursday, June 10, 2010 / 14:00 – 15:00

In this paper I discuss some questions of time in relation to the 'risky entanglements' that are the theme of the conference. A focus on temporality opens up some interesting perspectives on the multiple, complex and often contested relationships between dominant imaginaries and policies of research and the way it is done, lived, and negotiated by embodied individuals and situated collectives. Recent studies have offered valuable insights into the changing time regimes of academic knowledge production and their consequences for the everyday organisation of research work, drawing attention to temporal acceleration, overload and fragmentation in research cultures. However, these approaches rarely engage with the practical, embodied time-scales practice in diverse epistemic cultures. Here I seek to put work back into accounts of the changing temporalities of knowledge work, exploring some tensions between talking time and doing time, illustrating the ways in which lab scientists make time with things, and consider some of the slow times of knowledge work.

Who is the modern scientist?

Steven Shapin / Harvard University (USA)
Thursday, June 10, 2010 / 17:30 – 18:30

We need to understand who modern scientists are if we want to understand any number of things concerning their authority, their responsibilities, their motivations, their attitudes to their work-environments and rewards. One way into that understanding is through a brief survey of historical changes-- over the past century or so-- in the cultural and institutional place of science. I pay special attention to the changing situation of scientific knowledge between "is" and "ought" (the descriptive and the prescriptive) and to changing perceptions of the relationship between science and technology.

Affective accounting: Anecdotalizing scientific selves

Mike Michael / Goldsmiths, Univ. London (UK)
Friday, June 11, 2010 / 9:00 – 10:00

This paper explores two potential dimensions of emotion in science: a shift from the accounting of emotions to an emotioning of accounts, and the emergence of new emotion acts and their accounting affected by the specificities of biomedical practices and their objects. This related to a methodological use of anecdotes as a means to accessing affects within science.

Can they still stand on the shoulders of giants? Patents and the new spirit of capitalism in the life sciences (1970 - 2010)

Pierre-Benoît Joly / INRA Paris (F)
Friday, June 11, 2010 / 13:30 – 14:30

The expression „academic capitalism" has been coined in the 90s to point out the colonisation of the academic world by norms and values related to market mechanisms, new forms of control of academic work, and the challenge of professional autonomy of scientists. The expression also refers to the commodification of knowledge, partly related to the protection of research results by utility patents and the negotiation of exclusive licences. However, if we depart from the mythic conceptions of universalism and communalism as norms of scientific life and acknowledge that patents have been used by academic institutions since a long time – we may wonder what is really new in the current situation and what is the actual role of patents in the transformation of scientific life. The first goal of this presentation is to clarify these points: what has changed in the practices of patenting public research results since the 70s? How do these changes affect research practices? What are the characteristics of "scientific entrepreneurs" in the late 20th Century? We also focus on the engagement of individual scientists and institutions in the building of "scientific commons". This reveals that, beyond priority of property, managing accessing and shaping spaces of circulation of resources are among the key abilities of the academic capitalist.

Session
Collaboration and the social organization of research work
Thursday, June 10, 2010 / 10:30 – 12:30 / Main hall

Delegate or perish: Competitive federal grants and the current organization of research and training in the biomedical sciences in Canada

Salonius, Annalisa
Heritage Foundation Philadelphia, USA

Most academic scientists in Canada, as in the U.S., are dependent on federal research funding. Despite this, the effects of funding arrangements on the organization of research have not been systematically examined. The structure of academic labs in the life sciences has actually changed significantly since the 1960s in both countries. In the 1960s, the typical academic lab group was small, but today labs are often have twenty or more members, most of them graduate students and postdoctoral researchers. Based on findings from 78 work history interviews with graduate students, postdocs, technicians and professors in the biomedical sciences done during an ethnographic study of academic labs in the biomedical sciences at leading Canadian research universities, this paper describes the current organization of research and publication in these academic labs, and argues that this pattern is relatively new, a response to the constraints and opportunities associated with research funding and its institutional accommodation by universities. This paper builds on an earlier paper, which showed how the emergence of large labs composed mainly of graduate students and postdoctoral researchers in the biomedical sciences in Canada was primarily due to changes in practice of academic scientists due to a shift in the 1980s which made their careers fully dependent on competitive federal funding (Salonius, forthcoming). In this paper, the findings show that the dependence of most contemporary biomedical professors on trainees as research assistants is associated with the full incorporation of trainees' research into the production of faculty research through several institutionalized practices: 1) delegation of the experimental work on projects to trainees as the trainee's main project, 2) sharing scientific credit with trainees 3) informal integration of scientific credit into the structure of training, practices which findings also suggest were not standard in the 1960s and 1970s. The main argument of the paper is the dependence of academic scientists on standard competitive grants means professors in the biomedical sciences must conduct research on a *organizational basis* (where someone designs the work and then recruits others to carry it out) which under the conditions associated with these grants means delegation of work to trainees. I argue that the current organization of research and training in academic labs with standard competitive grant support in the biomedical sciences can be theorized by extending the use of principal-agent theory, which has been used to describe the relationship between government and science (Guston, 2000) to the lab level, such that the delegation of government funds for projects to scientists, under the conditions associated with standard competitive federal grants, *necessitates* a second delegation of the work to trainees, something which findings suggest has resulted in significant changes to the structure of graduate training as well as authorship in this field as scientists attempted to align the interests of trainees with their own under competitive grant support.

Scholarly collaboration, affective labour and digital technologies

Wyatt, Sally, Dormans, Stefan and Antonijevic, Smiljana
Virtual Knowledge Studio, Amsterdam, The Netherlands

Scholars in the humanities and social sciences routinely engage in collaborative work, and in affective labor stemming from such collaboration. The diffusion of information and communication technologies (ICTs) that has occurred over the past decades offers many possibilities for augmenting or disrupting such collaborative work,

by blurring the boundaries between visible and invisible tasks, influencing the division of labour within teams, as well as by bringing to light various affective underpinnings of scholarly practice. In this presentation, we will present a conceptual framework for understanding the range of activities done by scholars in the social sciences and humanities in order to collaborate. We focus in particular on how these tasks are affected by the use of digital technologies in communication (e.g. email, shared calendars) and more directly in knowledge production (e.g. creation of databases, preparation of texts). Our analysis is based on research about on-going, large-scale, international collaborations amongst social and economic historians as well as our own much smaller scale cooperation in writing a book chapter (under review) on which this presentation is based. Drawing on recent debates about immaterial and affective labour, we present a set of conceptual tools for understanding the range of tasks involved in scholarly collaboration. We distinguish between care work, articulation work and persuasion work, all of which are being affected by the introduction of digital technologies, with consequences for the ways in which some work and some workers are visible and valued. The introduction of ICTs sometimes serves to make previously invisible elements of collaboration visible. We raise the question of whether this happens at the cost of affective labour which may sometimes be left implicit and tacit. Our analysis challenges stereotypical narratives which depict scholarly work as predominantly rational, and, especially in the humanities as solitary. Such narratives conceal the fact that the academic community is not immune to both positive and negative aspects of affective engagement, and that such emotional engagements constitute an inevitable element of knowledge production. We argue that to understand the dynamics of knowledge production more fully, scholarly practice should be rethought and reformulated so as to reflect the full range of scholarly labour—the practices of care and neglect, the complexities of articulation work, the importance and hidden dimensions of persuasion work, and so on. As mentioned in the call for papers, we combine empirical analysis with theoretical frameworks of change. We focus on how new technologies of collaboration are refracted in specific disciplinary and institutional contexts, with particular emphasis on what these technologies suggest for what being a researcher today actually means.

Growing into academic landscape: PhD students in molecular biology

Červinková, Alice Anna
Institute of Sociology, Academy of Sciences of the Czech Republic

My presentation is based on my present ethnographic research within the community of molecular biologist in the Czech Republic. I am working particularly with researchers who have spent their postdocs (and PhD studies) in foreign countries and who are coming back to the Czech academic environment to establish their own labs and research teams.

In my presentation I am particularly interested in issues related to the enactment of an academic career within the changing rationales of knowledge production. I understand the process of growing into academia as a complex process of re/producing institutions, disciplines and knowledge.

The organizing principles of laboratories are changing. Whereas positions in the traditional model were distributed more horizontally around the lab leader, the main feature of the present laboratory is its verticality. Positions of independent, experienced researchers are disappearing, and laboratories are organized along the axis lab leader – postdoc(s) – PhD students – MA/BA students. First, looking at the lab as a network within which knowledge is created by people and apparatuses, I am concerned with the effect of organizing principles of laboratories on allocation and distribution of responsibilities, hands-on and analytical work and in/dependence among the members of research teams.

Second, I am concerned with the coexistence of cooperation and competition that reach beyond the laboratory environment. Molecular biology belongs, on the one hand, among highly competitive scientific fields where knowledge in process is strictly guarded; on the other hand, it belongs among scientific fields where knowledge production is based on a high level of cooperation and collaboration that could not be restricted to laboratory walls. I am interested in the practices through which PhD students are socialized into different levels and ways

of cooperation, collaborations and research networks as well as how they experience and enact competition. Furthermore, both collaboration and competition are important features of building one's scientific career.

Latent individualities, latent collectivities: Engaging with future and present forms of individuality and collectivity in life science research

Müller, Ruth
Department of Social Studies of Science, University of Vienna, Austria

The last decade has seen significant shifts in the framework conditions of living and working in the life sciences, such as changing funding structures, increasing projectification of scientific work and the integration of multiple audit mechanisms into structures of scientific knowledge production. Alongside these changes there have also been significant transformations of career rationales and career paths in science: It could be argued that there are increasingly normative ideas emerging about how a scientist's life course *should* look like to qualify for a career. Central elements of this normative vision are engaging in international mobility and global competition as well as submitting to reoccurring moments of evaluation, application and selection. All these aspects are framed as both signs and sources of a scientist's quality. Together, they seem to constitute a "blueprint" against which scientists and their life courses are matched and measured, and that has become institutionalized in the employment and assessment policies of current academic institutions.

In the Austrian contexts, these global trends have stimulated universities to drastically cut back long-term positions and instead encourage in international mobility and competition. This means that while the number of short term positions on a junior level has increased considerably due to heavy investments in the academic life sciences, the number of group leader positions has not been growing at the same rate at all. As similar constellations can be found in various countries, this leads to high international competition for a relatively small number of senior positions among an increasing number of junior researchers.

Hence, "career" today could be framed as a narrative about scientists performing and competing individually on a global stage. However, at any given moment in time, these scientists are also part of specific local collectives (e.g. research group, project teams) in which they work and live. Drawing on material collected in the research project "Living Changes in the Life Sciences" (U. Felt, J. Allgaier, M. Fochler, R. Müller), this paper will explore how given the current career rationales that emphasise individuality, mobility and internationality, junior scientists make sense of these different forms of collectivity in their local scientific environments. For doing so, I will mostly focus on biographical interviews with PostDoc scientists: Precariously located at the bottleneck of scientific careers – the potential transition to becoming a group leader – PostDocs are highly subjected to the pressures and tensions inherent to current ideas about careers. Hence, their accounts provide thick narratives on their understanding of current "career rules" and on how they affect their ways of relating to the local institutional and interpersonal settings they are part of.

This paper will show that against this backdrop most PostDocs frame their involvements in specific local research settings as highly temporary, as momentary stopping points along an internationalized career trajectory. Mostly lacking any local long-term perspectives, PostDocs are constantly assessing their current collective involvements in relation to their future as individuals exempt of these contexts. Thus, they remain what could be called *latently individualized.* This significantly affects the way they relate to their current collective contexts, as they e.g. rather focus on accumulating transferable forms of output than on engaging in more context-bound and long-term investments. Yet, in the few cases where we find PostDocs being offered more long-term perspectives within their current contexts, their strategies change notably: Here, a latent collective future is echoing back into the present, rendering more long-term investments in collective local structures worthwhile. I will hence propose the notions of *latent individualities* and *latent collectivities* as helpful tools for thinking about ways of relating individual and collective futures to present forms of individuality and collectivity and to understand how the contemporary emphasis on mobility and internationality in scientific careers might affect these relations.

Session
Growing into science
Thursday, June 10, 2010 / 10:30 – 12:30 / Chapel

Young. Academic. Life Scientist. Inventing Ways of Manoeuvring Uncertain Research Landscapes

Sigl, Lisa
Department of Social Studies of Science, University of Vienna, Austria

Within the last two centuries there have been many authors suggesting that the culture and practice of doing research in the life sciences is changing in a close interaction with it's societal contexts. Some argue that due to these entanglements of science and society there is an increase of uncertainty and risk in contemporary culture – to the point of arguing that our society is a risk society or that we live in an age of uncertainties. Until now debates on the character of these uncertainties and ways of coping with them are largely focused on a macro- or system-point of view while our studies on work cultures in the life sciences have clearly shown that researchers feel confronted with high and increasing levels of uncertainty and risk on the micro-level as well.

STS researchers have already acknowledged the "radical uncertainty" of life science research and the challenge of dealing with the inherent uncertainties of scientific work. However, building on biographical and work culture interviews with young life science researchers I argue that the challenge is not limited to coping with contingencies in research but extends to uncertainties that fragmented employment conditions, ambiguous performance assessment, individualised career norms or impermanent social and private contexts bring along. In inventing ways of coping with these uncertainties resp. manoeuvring around them young researchers find new paths of every-day decision-making in research and thus re-shape contemporary academic work cultures.

As an analysis of their coping strategies suggests, it is not single uncertain aspects that researchers respond to but the conditions that emerge in their complex interplay; such as permanent change of contexts, acceleration of work processes, projectification of ever more aspects of life or paradoxification of demands. It is remarkable that researchers' repertoire of coping with these uncertainties seems to be largely *individually applied*; including strategies of "patchworking", "monitoring", "gaming" or "investing". Within conditions of individual and linear career standards, high competition and performance pressure, collective ways of coping are largely limited to paternalistic caring of the lab leader for his/her staff and small niches of solidarity between lab members.

It seems that through conditions of permanent change, acceleration, projectification and paradoxification the responsibility of dealing with uncertainties is transferred from a policy-level to the level of individual researchers. This shift not only risks putting excessive demands on young researchers but also restores a situation in which "radical uncertainty" – a necessary precondition for innovation – is turned into an individual risk that researchers rather try to avoid.

When the "old world" disappears…. The young Polish scientists mobility and the modification of hierarchical relationships in life-science environment

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The mobility of life-science researchers is nowadays an obligatory component of their careers. After several years of foreign experiences some of these mobile researchers decide to return to their home country in order to easily access to the lab-leader position. What happens when they are back?

This paper is based principally on deep and long lasting ethnography realized in Poland (4 years of observation in a molecular biology laboratory) and on the research, which I realized for FNP - Polish Foundation for Science (115 in-depth extended interviews); this study concerns the careers of FNP's laureates, who after a foreign experience were back. I compared three cohorts of mobile researchers in order to analyze the impact of historical and political context of Polish Transformation and EU accession on the careers of Polish scientists.

According to my results, young scientists during their work abroad learn another standards of work, which includes the creation and maintaining the specific relationships. These relationships are different from these practiced in Poland. After their return, mobile researchers perceive Polish traditional environment, based on hierarchical relationships as an obstacle for pursuing a dynamic and creative scientific activity. The major problem seems to be the criteria of the authority construction: 'old style Polish system of value' (based on the age, a career position, titles and supported with the informal relationships), differs from 'international standards criteria (based on scientific values such as efficiency of scientific activity and actual knowledge and not the past achievements). Contrary to the largely spread opinion that the one of the hugest problem of Polish scientists is the lack of the instruments and equipment, the "social factor" - relationships among researchers - is pointed out by my participants as a huge obstacle in the decision of keeping a job in Poland. These, who came back, in order to create similar conditions of work to previous, which they benefited in the place of their foreigner experience, try to modify 'traditional' relationships. These changes are perceived by Polish community of scientists as an important part of the process of internationalization of, so called, "Polish Science" or/and process of "normalization" of it. Old networks and structures of support are perturbed by the activity of these dynamic 'coming-back Transnational Professionals' who create their networks based on different values.

Starting from the modification of professional relationships between close collaborators, the impact of this change is very important. This is not only the hierarchical relations, which are modified, but the whole system of values, standards of scientific work, career strategies (e.g. passing through the 'habilitation procedure') and work practices are transformed. These changes are perceived as a "liberating" process – democratization of relationship between laboratory team members, an abolishment of previous hierarchies, which, according to participant's opinion, paralyzed the development of Polish science. These modifications are largely perceived not only as a part of huge process of globalization but first of all, as an entire part of Transformation - the process, which started in Poland after 1989.

Mobility, corporate funding and the capitalist policies of academic research

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This paper argues that we have a growing problem in the information age centered on our current academic research institutions. The problem is that our policies to promote the knowledge society that center on corporate funding and mobility undermine the cultures and institutions that have traditionally been the centers of knowledge production. The interaction between the promotion of mobility in late capitalism and the integration of corporate funding into academic research has weakened the communal aspects of research; thus transforming our systems of knowledge production from a system that generates knowledge as a public good into a system that generates knowledge as a commoditized private good. Through the analysis of accounts of the transformation of academic labour and research from websites and blogs, policy documents and reports from the E.U. and reports from the

OEDC, this paper shows the relationships between the policy discourses, the new enclosure movement and the policy of mobile research workforces as contravening the model of the university as system of knowledge production. The tension between the university as a model of knowledge production and the idealized nomadic knowledge or informational worker as model of knowledge production highlights this problem as one of a plethora of problems in the transition of institutions in late capitalism from centralized systems to dispersed systems.

Growing into what? On the (un-)disciplined socialisation of young researchers in transdisciplinary research

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The past decades have witnessed a growing debate claiming that complex societal problems like climate change call for new forms of knowledge that transcend the disciplinary structure of science. Problem-formulation and -solving strategies should be opened up: Collaboration between participants from both science and society should assure the social robustness of the knowledge produced and the solutions would be adapted to the specificities of their context of application. 'Transdisciplinarity' is the notion widely employed to capture this mode of knowledge production. Researchers are thus expected to show a high capacity to work in teams and to engage with non-scientific actors.

Yet simultaneously with such opening-up processes of the research system we can also witness closing-down mechanisms. The most obvious are the omnipresent highly normative auditing processes such as assessment exercises that strongly focus on individual performance and disciplinary indicators such as disciplinary publications and impact factors. This goes hand in hand with increasingly temporalised career structures and the corresponding need for the individual researchers to constantly take care that sufficient capital (e.g. first author publications) is accumulate in order to assure their individual career progression.

This tension between the need for collective and inclusive work on the one hand, and the focus on individual performance in terms of disciplinary quality criteria on the other is particularly challenging early stage researchers. This challenge within the context of transdisciplinarity is double: to manage the tension between collective work and individual career perspectives and to do so without being able to build on a relatively stable set of values, norms and practices, as within disciplines.

In our contribution we aim to address the question how young researchers struggle with these conflicting demands and pressures. To do so, we have carried out research in a PhD program in an Austrian university working on sustainability issues from a transdisciplinary perspective. Coming from different disciplinary backgrounds the PhD's are confronted with and socialised into a research area that is not only located across disciplines, but also is meant to include extra-scientific actors. They face questions such as what 'being a researcher' means in such a context, what their competences actually are and how such hy brid-positions relate to classical governance structures in academic institutions, as auditing, specific career models, etc.

We are thus interested in understanding how these young researchers conceptualise and inhabit their *epistemic living spaces*, and how they perceive and experience their room for manoeuvre – epistemologically, institutionally and socially. This cannot go without under standing the specificities of transdisciplinarity as a *knowledge regime* and the kind of normative and structural frames this imposes on young researchers. By that we mean to investigate how the institutions and people involved in transdisciplinary research, the guiding myths and ideologies which form the basis of such an epistemic approach, but also forms of resistance against it impact on the way these young researchers live and work in the respective academic environment.

Session
How engagement changes research cultures and practices
Thursday, June 10, 2010 / 10:30 – 12:30 / Edu4you

The risky entanglement of ELSA: Experiences and prospects

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Like other large-scale scientific programmes, the Netherlands Genomics Initiative (NGI) includes research and communication on ethical, legal and social aspects (ELSA). NGI is a hybrid network of consortia with universities, research institutes, industry and societal organisations working on genomics. At present, all of its ELSA activities are accomodated by the Centre for Society and Genomics (CSG).

In light of its mission to analyse, assess and improve the interaction between genomics and society, the CSG has developed a programme that combines social science and humanities research with communication, education and public dialogue activities. This paper addresses the question: What does it mean to do research in the context of this particular ELSA programme?

In this paper the research programme of the CSG serves as a case to show how the values that guide scientific (including genomics) research today - relevance and usability in particular - also affect knowledge cultures of social science and humanities research. In the CSG programme such values haven been translated into the objective 'to contribute to a societal genomics agenda' with auxiliary policy measures to stimulate interactive research. We discuss the impact and meaning of such notions and measures for individual projects and researchers on the basis of a preliminary analysis of documents, observations and interviews with CSG researchers.

Our study shows that the assigment to produce academic knowledge and contribute to a societal genomic agenda, which follows from CSG's mission and objectives, produces a tension between *analysis* and *application* in many project proposals and accounts by researchers about their projects. The paper presents various ways in which researchers experience, address, solve, circumvent, deny or otherwise deal with this tension. We present it as a continuum, with concentrations of projects in the CSG-programme on both ends: *either* focusing on (critical) analysis *or* on implementation/application.

Yet some proposals or researchers explicitly present interactive research as a means to connect analysis and application, e.g. in the design of teaching materials, by contributions to scientific debates in the genomics field that they study or by combining the organization and study of public dialogue events. We confront such positions with literature from interventionist STS, empirical ethics, political philosophy, interactive technology assessment and critical public engagement to outline a notion of 'pragmatist ELSA'. We state that the social as well as the academic relevance and quality of ELSA research could benefit from strengthening the middle ground between analysis and application. The present research programme of the CSG offers a rich source of data to assess the opportunities and risks of pragmatist ELSA in light of that endeavour.

Open labs – biotechnology labs as a site for speculative forms of public engagement

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Accounts of the interaction between cultures of science and technology research and non-expert groups have focused on one hand on open innovation within the lab, and on the other hand on public engagement strategies within wider society (Wynne et al., 2007). In this context, open innovation has been characterised as knowledge formed in the lab via hybrid communities of experts and motivated users (Callon & Rabeharisoa, 2008), whereas recent forms of public engagement have been characterised as a form of public, upstream deliberation, relating to

emerging forms of science and technology across a range of stakeholders (Kearnes et al., 2006). In this paper I provide a brief review of related literature, to provide a set of concepts and methods with which to discuss a form of public engagement that takes place in, and impinges upon the culture of the lab. For my account I will draw upon empirical material from Material Beliefs, a two year public engagement project which brought together scientists, engineers, social scientists and public groups to consider alternative outcomes for biomedical research (Beaver et al., 2009). I will reflect on the non-instrumentality of discussions about technology that take place within the lab, and which then lead onto the design of hypothetical products and services for public exhibition. This will lead into an account of the extent to which alternative, and sometimes critical accounts of science and technology research, leak in and out of a research territory.

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Engaging with sustainability technologies and doing STS: Risky entanglements?

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This paper intends to highlight some of the remarkable and interesting changes within recent Science and Technology Studies (STS) research practices and cultures. Echoing the title "Risky Entanglements", this contribution takes as its point of departure the assumption that STS researchers are increasingly invited to engage in explicit forms of normative dialogue about the governance of emerging technologies. Especially in the case of technologies branded as "sustainable" – like synthetic biology – STS researchers are invited to engage in normative dialogue and to critically and reflexively explore and evaluate alternative actions and avenues for change. While we continue to argue about the true definition of "sustainability", the challenge of converting our present socio-technical systems to that of "sustainable ones" has developed as a master narrative, inspiring discourses even among STS researchers.

The purpose of this paper is not to deny that STS offers solid and productive theoretical models to approach sustainability challenges. On the contrary, recent STS research is providing useful critical lenses for approaching emerging technologies' promises and their actual relevance to sustainable development, socio-technical alternatives in the development of these emerging technologies, and the dynamics at stake in the co-evolution of these technologies and society. But these opportunities for STS research might also produce entanglements such as a resulting contribution to the development of technoscientific promises related to sustainability and an increasing involvement in cross-institutional practices among which policy and decision-making practices are most salient.

As they become more and more relevant for understanding the co-production of science and technology with policy and the management of sustainability goals, among other institutional matters, STS researchers might become increasingly involved with practices of technology development, policymaking, legal decision-making and governance in different fields, such as sustainability technologies. Such engagement is likely to have consequences for research methodologies, for researchers' obligations toward different publics, and for the kind of knowledges STS-researchers deliver.

This paper intends to explore these consequences on STS research cultures and practices using as a case study the recent involvement of STS researchers into the governance of synthetic biology. Two reasons make the governance of synthetic biology an interesting window to look at potential entanglements confronting STS. First, synthetic biology has been staged in scientific discourses as the solution to a range of environment ills, including the problematic sustainable development. Secondly, synthetic biology has witnessed the development of what has been called "lab-scale interventions" – synthetic biologists, ethicists and STS researchers working together in the lab and sharing related funding. Two collaborative projects of this kind might serve as field work: the *Human Practices* Laboratory directed by Paul Rabinow or the partnership between the BIOS Center (LSE) and the synthetic biology team of Imperial College. How will this co-evolutionary research impact STS research practices? And what does this approach mean for doing STS, especially in terms of the balance between normative dialogue and analytical-distance? What might the impacts be, beyond STS, on the ways of thinking about and doing public engagement? These are the reflections that our contribution intends to initiate.

Transient entanglements: Geographies of knowledge brokering

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Over the past two decades there has been a proliferation of knowledge brokers and spaces dedicated to knowledge brokering: science shops, technology transfer offices, knowledge brokering activities between research and healthcare, and so on and so forth. The human actors involved in these brokering processes are individuals who are constantly in movement. And it is by moving around that they accomplish their threefold task: distributing knowledge, translating and transforming knowledge and, finally, rendering knowledge more robust.

The usual way of conceiving the movement and positioning of these knowledge brokers is to imagine them "in-between", to see them as occupying an interstitial space between two worlds. But brokers do not only move between two worlds. Their movements are much more varied, multidimensional and multifaceted. We detect at least four kinds of trajectories: first of all, the will and the work involved to engage in a brokering project (moving into), then, the moving between different worlds and the moving alongside actors and, finally, the detachment and getting away from these actors (moving away). Knowledge brokering is, in fact, based upon a very particular participative connection: a connection that is necessarily temporary, transient and flexible.

I will also argue that knowledge brokering is both a place and a process. The knowledge broker is a conduit between two worlds and s/he shows the way towards a (new) world. But this future world has uncertain contours - one is never sure whether brokering interventions will be a success. A broker only ever accompanies people, encouraging them to learn, to change certain practices, to think differently. A broker will have to wait several years before being able to see whether his or her intermediations have had an impact and left some traces and whether the knowledge that was mobilised and transformed has been made "sticky".

Session
Temporalities in research
Thursday, June 10, 2010 / 15:30 – 17:00 / Main hall

The changing temporal orders of knowledge production and academic identities

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The changing temporal orders of knowledge production and academic identitiesIn the current context of knowledge-intensive economy, the dominant belief is that knowledge forms the core element in economic growth and success. Competitiveness of enterprises, regions and nations in the global markets is seen to be dependent on how well and how quickly they are able to commercialise and convert scientific knowledge into new products and processes. Following this, universities are regarded as key players in the national innovation system and academic research is perceived and evaluated increasingly from an economic perspective. Furthermore, universities are not only expected to produce knowledge that can be commercialised elsewhere but also to act themselves as commercial actors and to promptly engage in all forms of academic capitalism.

The paper explores what effects these macro-level changes have on research cultures in academia and the ways in which academics build their professional identities.

These questions are approached from a temporal perspective. Drawing upon time studies, the theoretical starting point of the paper is the thesis of the acceleration of time in the late capitalist society, giving rise to a non-stop, 24/7 culture characterized by simultaneity, non-linearity, incoherence and instantaneity. The speeding-up of the pace and rhythm leads to an extended present and a shrinking future, as in the rapidly changing conditions past achievements lose their significance and the future becomes all the more unpredictable. However, the process of speeding-up is not viewed as all-embracing, but due to the complex and multi-layered nature of time, older and newer 'timescapes' co-exist and intermingle, offering possibilities for counter-trends and alternative temporal practices.

My argument is that academia makes no exception to the general acceleration thesis. In the context of academic capitalism and entrepreneurial university, academics face growing external demands to produce more and better results in a shorter period of time, leading to the speeding-up of the pace of work combined with a variety of other temporal consequences. In addition, technological development, particularly in information technology, enables fast information retrieval and online communication with colleagues, partners and students worldwide. This saves time, but paradoxically, also accelerates the pace of work by increasing the total amount of available information and communication, and generating an expectation to be always connected or connectable. Also the internal development of science promotes acceleration, since many fields are making progress very fast, creating an increasing need to keep oneself constantly up to date.

Empirically, the paper is grounded on focused interviews with Finnish academics representing different disciplinary fields, organisational settings and academic positions. The questions addressed to the empirical material involve: How does the acceleration of time shape the nature of knowledge production in different disciplinary cultures and the ways in which academics perceive themselves and their work, build their careers and relate to their colleagues and partners? What kinds of tensions and dilemmas have emerged and by what means academics try to solve them? And finally, are there spaces for alternative temporal orders entailing possibilities for slow time?

The politics of emergence: Public-private partnerships and the timescapes of frontier research and co-innovation in Apomixis technoscience

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How are 'conflicts in time' in the hybrid, globalised research assemblages of agricultural biotechnology development effectively theorised from a social scientific perspective? This article furnishes a case study drawn from frontier research in a promising agricultural biotechnology, as this field comes under pressure in the context of the challenges of global food security and climate change. 'Apomixis', the capacity of certain plants to 'self-clone', would arguably comprise a revolutionary tool for global agriculture. In the last ten years, PPPs and other models of private sector funding of public sector research have emerged as leading templates for innovation, yet their hybrid character poses special challenges to stakeholders for the resource-poor..

The paper is based on detailed anthropological study of the hybrid 'Apomixis Consortium', a public-private partnership which emerged from the publicly-funded CIMMYT-IRD Apomixis project in the late 1990s. The Apomixis Consortium was composed of key stakeholders for a future Apomixis Technology from the public and private sectors: with respect to the former, CIMMYT, the Institut de recherche pour le développement (France), and the Research School of Biology at the Australian National University; in terms of the latter, Syngenta, Limagrain, and Pioneer Hi-Bred. The paper takes an historical anthropological and contemporary ethnographic perspective on how the timescapes of Apomixis research were reconfigured within the Apomixis Consortium, and to a degree, comparable Apomixis PPPs.

Through ethnographic critique, I analyse the conflictive temporal politics of project planning and management, co-innovation processes and structures, and frontier research trajectories and challenges, their political economic basis, and impacts on technology development. A particular focus is how inherent conflicts between schedules of funding and research delivery, and differing technical pathways such as wide hybridisation and genomics research, have to a degree been politically manipulated, driving reductions in the scope of viable research practices, re-conceptualistion of technology models, and end users. Building on my previous publications on time and emergence, the article illustrates how such conflicts are illuminated by a synthetic temporal analysis, bringing together perspectives from social anthropology and science studies. It thereby highlights implications for the production of public goods, discusses the wider ramifications for frontier research and co-innovation in plant genomics, and comments on the value of this analytical model for social scientific analysis of new configurations of timespace within biotechnological research assemblages.

The paper was researched and written as part of a wider anthropological study of the field of apomixis research, funded by the ESRC Centre for Genomics in Society and the ESRC Genomics Network in the UK.

The projectification of science

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An important difference between the traditional scientific work and contemporary research is the project format in which research and especially scientific collaboration take place. Science is increasingly seen as a manageable process, featuring strategies, roadmaps, and also takes shape as a 'project' with its own acronym and a special logo. However, reflection on the meaning and impact of the project in scientific practice is seldomly found – neither in studies that critically reflect on the universal adoption of the project as a way to organise society, nor in studies on scientific collaboration or scientific work (Cicmil & Hodgson, 2006; Hackett et. al., 2008; Shrum et. al., 2007). Based on three scientific projects in biology that I analysed in my PhD thesis (Vermeulen, 2009) - that respectively catalogue life in the oceans, make a cell *in silico*, and develop a new therapy against flu- I will explore what I call the 'projectification of science'. What does the adoption of a project mode of working in scientific practice entail? I will argue that projects are a way of packaging inquiry more

formally, through a design that considers a clearly defined problem that has a solution and a deliverable at the end. In addition, the project format helps to align the different societal realms involved in the research. The discourse of 'the project' acts to mark out a specific time and space horizon within which the project is to be undertaken. Moreover, it also implies that those doing the work must be prepared to be evaluated. However, projectification also changes scientific practice more profoundly which becomes apparent in tensions between scientific practice and project work.

Session
Researchers' socialization in new knowledge production contexts
Thursday, June 10, 2010 / 15:30 – 17:00 / Chapel

"Ethics-to-go": Reflecting ethics education in the life sciences in the Austrian higher education context

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In various countries there have been public demands that scientists should be more responsible for their work. The pressure put on scientific practitioners generally seems to rise every time the public is informed about scientific misconduct, fraud in research, the unethical use of animals in research and other ethical problems related to scientific research.

One solution taken by scientific societies was to formulate specific codes of conduct, good scientific practice and ethical guidelines in order to ensure public trust. A solution taken by many research universities was to install courses on research and/or bioethics in the professional training of scientists and engineers and often classes on ethics have become compulsory components in the higher education in science and technology subjects. However, often the purposes and scope of such courses is unclear.

In this study we are aiming at shedding more light on ethics education in the life sciences at Austrian Universities. This investigation is part of a wider research project[1] that is examining recent institutional and other changes in the working and research practices in the life sciences.

The central aim of the study on teaching ethics was to explore which role ethical considerations play in the university education of life scientists in Austria and more specifically how "ethics" is actually taught in this context. The goal was to get a picture of how ethical issues (that is issues relating to research ethics and/or bioethics) are conceptualised in teaching and how they enter the socialisation of future researchers.

For an empirical investigation of these issues we conducted expert interviews with university staff involved in teaching ethical issues to life sciences students at Austrian universities. Here, we wanted to know how they conceptualised ethical issues; what they said about the purpose of these courses and whether they considered ethics education being successful or not; how these courses came into being and other relevant issues.

Furthermore, two focus groups with students in the first or second semester enrolled in biology at the University of Vienna were conducted. These were intended to find out more about the view of students in the life sciences on subjects such as research and/or bioethics and whether they considered ethics education being useful or not.

As a main result different understandings of ethics and diverging views on the purpose and value of ethics education emerged in the interviews and the focus groups. These can be related to different views on the relationships between science and society; that is views that see science being part of society and views that see science and society as separated entities. A paradoxical effect of teaching "ethical topics" in own formal courses outside the lab may be that "ethics" is perceived as being separated from research practice in general. In the presentation we are going to present some of the results and examples from this research and will discuss some of the consequences of the practice of ethics teaching in the Austrian University context.

Interdisciplinary collaborations and pedagogy in doctoral training centres in the UK

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There is increasing policy interest in interdisciplinary approaches to doctoral education across the natural and social sciences, and the role that training collaborations can play in fostering new epistemic cultures. Twenty-first century science is assumed to need new types of scientists to work flexibly within transdisciplinary and transnational collaborative networks, producing both fundamental research and practice-oriented scientific advances. In the UK, the science research councils see interdisciplinary Doctoral Training Centres (DTCs) as one potential solution to the challenge of training such scientists, and the Engineering and Physical Sciences Research Council (EPSRC) has now set up more than 100 such centres. Beyond the ideological rhetoric, the extent to which they actually have an impact on science or industry or create new pedagogic environments to facilitate interdisciplinary collaboration is not yet evident.

Classic work on the professional socialization of scientists has focused on the power-laden ritualized hierarchies and exclusionary pedagogic practices that are a core part of the novitiate (e.g. Snyder 1971, Bosk and Hilgartner 1979). More recent ethnographies have asked questions about moral transformation and the normalisation of professional practices (Luhrmann 2001, Sinclair 1997). The growing field of research into doctoral education has highlighted the importance of relational agency and the range of academic and social relationships shaping doctoral student identities (McAlpine et al 2009). Research in Science and Technology Studies has also begun to engage with questions of pedagogy (Kaiser 2004), envisioning learning as an 'everyday process with multiple, accumulated experiential strategies' (Traweek 2004).

Our ethnographic research seeks to bring these fields together, developing an understanding of the moral valences, power dynamics and pedagogic relationships that characterize these new learning environments. We explore also how these centres foster intentional pedagogical practices and serendipitous collaborations in a variety of learning spaces across disciplines and generations. We compare the Oxford Life Science DTC training with existing approaches to doctoral training, as well as with other DTCs in the UK, and explore whether interdisciplinary dialogue is fostered by these new pedagogies.

Separate realms or productive entanglement? The research-teaching-nexus in scientific practice

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Is there a future science conceivable where research and teaching belong to separate realms? Contemporary research and higher education policies as well as the growth of extramural research institutes and research funding budgets suggest that a profound professional differentiation in science is under way, namely into researchers and teachers. This development is mirrored by attempts at institutional differentiation between excellent research universities and primarily teaching institutions.

However, when we look at the conditions structuring careers in science, the vast majority of scientists is still employed at universities and universities of applied sciences where teaching is not only tied to academic positions but also source of their legitimacy. In turn for providing higher education universities receive public financing. Furthermore, as long as the professor represents the common role model in science, teaching remains inherent to the academic profession and affects scientific practice.

Though teaching plays an important role in the everyday practice and experience of scientists, contemporary discourses on science focus on research. If at all, teaching is acknowledged as an impediment to research, and scientists are expected to seek to minimize their teaching load. But does this negative image of teaching prevail in the practice of scientists? Is teaching merely an obstacle to be overcome, or are there any signs for mutual and productive relations between research and teaching?

On the one hand, research achievements are considered paramount for academic careers. Scientists may experience the unequal prestige of research and teaching as leading to conflicts in practice, especially when faced with deficient study conditions and high numbers of students. Drawing on quantitative data we shed light on the structure of teaching at German universities and universities of applied sciences. We assert that teaching in large part is done by junior or early career academics, sometimes under precarious working conditions. Though these junior scientists may, as additional survey data shows, be motivated to teach, their engagement in teaching is hardly ever acknowledged by the scientific community and is only of secondary importance for their career advancement.

On the other hand, teaching appears not as an impediment to but rather as an inherent part of scientific practice. By drawing on qualitative data from problem-centred interviews with scientists in different positions, we analyze the meanings scientists attach to the research-teaching-nexus in their everyday practice. For several reasons, scientists engage in teaching as a matter of course: Their research may profit from teaching, and the students' contribution is for example acknowledged in forewords of publications. It is in teaching that professors recruit students as potential future academics. Moreover, teaching may provide instant social response and gratification that are rare in research.

As we witness profound changes in science, these must not be at the expense of teaching. Structurally, scientists may be under pressure to cope with their teaching loads. In practice, though, the relationship between research and teaching may be experienced as a zero sum game or as one-dimensional but also as interactive and reciprocal. This calls for a re-thinking of teaching as part of scientific practice.

Session
Economies of promise: Imagined futures as a resource of science
Thursday, June 10, 2010 / 15:30 – 17:00 / Edu4you

Topologies of the future: An empirical study on imagined futures and present pasts of systems biology in Germany

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After the successful structural analysis of the human and other organisms' genomes the last decade witnessed a fundamental shift in the area of research in molecular biology: The move into "-omics". So-called -omics research produced a plethora of data on genomes, transcriptomes and proteomes, which became increasingly difficult to manage and to understand. Consequently, new methodological and conceptual approaches were needed to systematise, integrate and interpret these data which go beyond a linear understanding of processes and systems. As a result, scientific attention moved to the complexity and dynamics of biological processes bringing a systemic approach to the fore which nowadays runs under the heading of systems biology. Systems biology – to be understood as a currently (re)emerging (Drack et al. 2007) field of research – opens up new research avenues for modelling, understanding and manipulating living systems from an IT-supported point of view and can therefore be considered "new". It claims to provide a "holistic" understanding of biological entities and processes and – ultimately – of life, overcoming the conceptual and operational shortcomings of more linear approaches. The paper proposed here investigates and interrogates the current systems approach in the life sciences with respect to promised futures emphasising future's past (Kosellek 2004). It draws on research done in the field of a sociology of expectations (Brown/Michael 2003) and analyses past and present framings and their interaction with future expectations about systems biology by empirically relying on data taken from landmark publications and scientific reviews (Hedgecoe 2006). This text type is known to have an impact on scientific disciplines by deploying a language of the future that frames future research avenues, arranges resources, coordinates research activities, helps to cope with uncertainties and sketches images of possible social benefits. The aim of the paper is twofold: First, it analyses the semantics of these interpretative repertoires in written evidence and, second, tackles their impact on the discipline's development in Germany by using citation indexes and data taken from explorative expert interviews. In doing so, it provides an overview over the topologies of the future (the structure of theoretical concepts, their distribution, contestation and change) in systems biology in general, contextualises their impact within German systems biology in special and provides an analytical slant on deployed economies of the future of systems biology.

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The role of societal valued promises in the development of toxicogenomics

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Representations of the future are crucial to create expectations of future development of technologies. It is especially used for technologies which are still in their infancy and need financial investment for further development. Current safety evaluations on new products are predominantly based on the results of laboratory animals. The high demand of today's risk society for safety is directly conflicting with the societal wish to reduce the number of laboratory animals.

Toxicogenomics promises the best of both worlds: more reliable and accurate data (and hence safer products), whilst simultaneously reducing the number of animals used in the assessment thereof. Toxicogenomics uses genomic insights, ranging from human gene expression to metabolic products, to assess the toxic character of man-made chemicals.

Safe products with a reduced use of laboratory animals are of significant societal, industrial, scientific and political value. The question remains whether toxicogenomics will live up to this expectation.

Scientists are well aware that promising to provide these utilities, appeals to the interest of the policy-makers and funding authorities who grant them. Policy-makers, on the other hand, request promissory results within a relatively limited time frame. This difference in approach puts pressure on the framing of promises and expectations of technologies.

This paper presents in which manner the promise of reducing laboratory animals have been received, evaluated and framed at the science-policy level in the Netherlands. It provides empirical data to the sociology of expectations, drawing on recent writing within Science and Technology Studies (STS). The paper studies the Dutch Assuring Safety without Animal Testing (ASAT) initiative, where the interests and promises of scientists, policy-makers and funding authorities coexist. Within ASAT, one project is focused on the toxicogenomics approach.

This case study provides insight in the way various actors at the science-policy interface frame the 'reduction-promise' to gain approval and justification for the continuing of toxicogenomics investments. The lessons learned from this specific casus will be applicable to future technologies that use societal promises to mobilize support.

Cycles of promises: Comparing nanoscience, agricultural science and chemistry

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Science is shot through with promises. Statements about future societal benefit seem to be an integral part of the way science proceeds, at the level of individual scientists and at the level of research fields. This raises questions about the way projects are selected and funded, how research problems are structured and about the responsibility for scientific promises.

In this paper we will start from the idea that promises have a cyclical nature. A familiar phenomenon in the sociology of expectations is the hype-disappointment cycle: a phase of inflated expectations is followed by disappointing results. The overshoot of expectations is needed to gain attention and funding, especially in new, emerging science and technology. Yet, in other, more established fields of research other cycles the dynamics of promises can also be understood as a cyclical process.

We explore two basic cycles that seem fit for established fields as well. First, a *funding* cycle, in which promises lead to funding decisions, and to eventual research and results, which, in their turn are a fertile ground for new promises. Scientists, research councils and universities know these and will act accordingly. Second, an *attribution* cycle, in which the ownership of the promise and the research are at stake. Here promises lead to struggles of attribution (who is addressed by the promise?), and, as research takes place and lead to results, to struggles of praise and blame: who is responsible for positive, negative or absent outcomes? For individual

researchers and for spokespersons of research fields it is important to be held responsible for as many benefits as possible, while apparent failures, disappointments and negative side-effects should be attributed to other sources.

We have three research fields in the Netherlands that we studied with interviews, longitudinal studies of policy documents and laboratory visits: nanotechnology, agricultural science and chemistry. Since the 1990s nanotechnology has been surrounded with many promises of breakthrough and opening of new fields of research: new materials, surface effects of familiar materials and new devices (in nano-electronics or lab-on-a-chip). It has also led to concerns about toxicity and feasibility. In the case of agriculture the encompassing promises that have led to specific constellations of researchers and their institutes, and have inspired a heuristic of intensification and production, now take the shape of more sustainable and animal friendly solutions. In chemistry the change in promises is less drastic. Academic chemistry research has always been attuned to the needs of industry. Yet, the way it should serve industrial needs is not straightforward. Moreover, its contribution to externalities of industry (pollution, depletion of resources) has been contested in various degrees as well. We trace how the two cycles of promises in the three disciplines have evolved between 1990 and 2010 and have led to specific institutional arrangements of funding, praise and blame.

Session
Rituals of assessing academic work
Friday, June 11, 2010 / 10:30 – 12:00 / Main hall

Auditing scientific expertise in a new culture of cognitive capital

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In recent years scientific expertise and knowledge transfer has increasingly been legitimized in terms of quantitative scientometric data and techno-economic indicators. Due to new mechanisms of public accountability in research institutions, indicators have been installed that thoroughly underdetermines the long-term quality and utility of scientific knowledge and expertise (Elzinga 2004, Power 1995). The case of expert knowledge in the humanities and social sciences are particular characteristic since much of the knowledge transfer in these disciplines is not registered by the dominant science policy indicators. When scientific legitimacy is exclusively interpreted in terms of quantification and commercialization, the more generic societal uses of scientific knowledge and expertise are not only made invisible but potentially discredited - with severe consequences on the way in which researchers produce, distribute and debate new knowledge. Taking into account a recent debate between Webster (2007), Nowotny (2007) and Wynne (2007) on the public role of Science and Technology Studies, this paper discusses how the "material turn" has influenced the analytical framework of current evaluation policies. From the standpoint of a more principle political-philosophical discussion, I opt for a more balanced notion of institutional legitimacy and multi-criteria evaluation tools in the auditing of scientific expertise.

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Making things count: The effect of research assessment on creating research outputs in the Czech Republic

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External research assessment has become a dominant feature of research systems around the globe. Instituted in 2004, the Czech research assessment is carried out annually, with criteria also changing on an annual basis. Since 2010 the assessment is to be tied to financial rewards based on 'points' received according to the research assessment methodology. Thus, what counts is to also count economically.

Although papers in impact factor journals are at the core of the assessment, there are other outputs that get recognised and thus, receive points. And there are many others that don't. Some academic outputs are excluded simply because they do not constitute a relevant result according to the methodology; others are excluded because only some scientific journal databases are included in the assessment. Others become virtually meaningless because of the number of co-authors although there are important disciplinary differences. In terms of applied research results, the situation is similar – a specific notion of what constitutes value and utility for society affects what gets included in the methodology.

In my paper I will examine researchers' practices of making their research work count. I will explore how they work with, around and against the research methodology to make their research fit the criteria (or not). I will pay specific attention to disciplinary differences and similarities and implicit codes of conduct related to secrecy and openness of research results. I will also examine how the national research assessment methodology may work against specific international practices in a given discipline. With my presentation I aim to contribute to the ongoing debates about the changing textual economy (Kellogg 2006) of public research in academic capitalism (Slaughter and Leslie 2000, Shore 2008), and the specific impact on social sciences and humanities (SSH) and natural sciences.

Empirically, the presentation draws on individual and group research interviews carried out with Czech researchers in humanities, social sciences and natural sciences and on an analysis of research policy documents and media appearances by science policy-makers and stakeholders.

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The changing credibility cycle of Dutch animal sciences: Struggles over relevance in academic agricultural research

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There is a widespread sense that the rationales for supporting academic research have profoundly changed, and are increasingly based on promised contributions to technological innovations or other societal benefits. This shift has been denoted through concepts such as Mode 2 knowledge production and post-academic science, but whether and how it can be discerned in the daily practices of academic researchers is still poorly known. A better understanding of local research practices is important, however, as these give shape to the eventual research content and its relationship with society.

Against this background, the current paper investigates the effects of the changing institutional environment on academic research practices in the case of Dutch animal sciences. We use the credibility cycle as a sociological model for scientific practice, starting from the assumption that scientists are continuously involved in a struggle for reputation. Based on a qualitative analysis of 48 documents and in-depth interviews with 12 scientists we describe and explain the changes in the Dutch agricultural research system and their effects on the credibility cycle in three fields of animal science.

The two most important changes in the Dutch agricultural research system over the past 30 years have been shifts in the available funding and the rise of performance evaluations. Instead of relying on steady block-grant support, academic researchers now depend on a combination of funding sources, most of which demand a promised contribution to the development of sustainable agriculture. Interestingly, in this case the funding shifts do not reflect a societal pressure to contribute more to practical applications, but rather are intended as an

incentive to other practical applications than before, and to involve a broader set of stakeholders in the research and agenda setting processes. Simultaneously, the rise of systematic performance evaluations has increased the pressure on academic researchers to publish in scientific journals.

Our analysis shows that the institutional changes have several consequences for the credibility cycle, most notably on the way scientists acquire funding and earn recognition. Together, these changes have only stimulated interactions with societal stakeholders in fields where this helped to sustain a basic research agenda. In other fields there turns out to be a tension between satisfying the needs of application-oriented funding sources and reaching high scores on evaluations that are dominated by bibliometric indicators. In response to this tension some researchers move towards more fundamental research agendas; others accept a lower scientific productivity, but this may threaten the long-term viability of their field.

To conclude, societal knowledge demands change faster than internal scientific structures, such as specialized journals and associations, are able to develop.

Session
Ethical and societal responsibility in research practice I
Friday, June 11, 2010 / 10:30 – 12:00 / Chapel

Research ethics committees: Constructing authority on good science and good governance

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Answering the growing need for governance of scientific research, Research Ethics Committees (RECs) were established internationally in the 1970s as an interdisciplinary check whether studies involving human beings were deemed reasonable, considering expected risks and burdens on the one hand and expected benefits on the other. RECs were introduced as 'technologies of trust'. However, to provide ethical legitimation to research, RECs had to develop authority and credibility, to researcher as well as to the world outside. Apart form other means to gain credibility, RECs invested in the quality of the review process. From a medical perspective credibility is often connected to hard, statistical evidence, however, ethical review is a highly interpretative process. Members of a REC have to work through huge piles of documentation to understand the studies under review, or interpret it in terms of risks, burdens and benefits, and to translate the regulative framework into the specific cases.

In this paper we will show how research ethics committees in the Netherlands construct their authority regarding norms on 'good science' and norms of 'good governance'. We did a longitudinal study among 3 very different RECs in their local contexts. These committees were selected on the basis of the variety in their work fields, which can generally be described as a multidisciplinary, a single-domain (both RECs affiliated to one or more institutions) and a non-affiliated REC. These committees and other significant parties in their work field were followed and studied by conducting interviews, observations and document analysis. First, we will discuss the role of 'ethical expertise' in the construction of authority. As we will show, ethical expertise is claimed on the basis of very different aspects such as law, experience, empathy and reputation. Secondly, we will address experienced problems concerning authority of RECs as well as the solutions practices come up with. Expertise, as the main basis of authority claims, is perceived problematic as studies are increasingly complex and expertise in RECs considered inadequate to judge individual protocols.

From this analysis we will argue that the interpretative side of ethics review and the specific focus on authority by expertise is problematic for the credibility/authority of ethical review as a governance tool for ethical issues in human related research. Therefore, we need to re-consider these institutions and investigate alternative directions of governance, which could strengthen both public and professional trust in research with human beings.

What is ethical and good scientific practice? Is it in danger?

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The conditions under which university-based scientists and researchers are working have changed dramatically. On the one hand, there is more room for interdisciplinary and international collaboration and exchange. On the other hand, there are growing pressures to produce results in ever shorter time frames and with limited financial support. Both dynamics, as widely assumed, may impede good and responsible conduct in research.

The paper assesses the validity of this assumption by taking an in-depth and comparative look at the daily practices of scientists who are embedded within different research cultures. Empirically, the study draws on

interviews and focus group discussions with university-based researchers at different stages of their career, in different disciplines, and in different countries (so far, Germany, UK, USA). This is supplemented by interviews with representatives of key structures and institutions of academic self-governance that are supposed to promote good and ethical scientific practice (ethics committees, ombudsmen, academic publishers, quality management etc.).

The paper presents an essential part of my research project "Scientific integrity in the context of integration and competition", which is currently realised within the framework of the Center of Excellence "Cultural Foundations of Integration" at the University of Konstanz, Germany. This project seeks to achieve two overall objectives: First, it seeks to establish a rich and profound empirical basis that allows us to move beyond anecdotal evidence (and theoretical assumptions) about the manifestation of two central dynamics - integration and competition - in academia today. This basis shall allow us to better understand to what extent and in which ways these dynamics may actually affect good and ethical scientific conduct. Second, the project brings together two strands of research that are often working in parallel: studies about the human side of science and studies about the mechanisms of university governance and academic self-governance (with a particular view to research ethics and integrity). With this two-dimensional approach we may identify potentially mismatching interpretations of "good and ethical scientific practice" as well as of appropriate safeguarding mechanisms.

Talking ethics in technology controversies

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The discourse about ethics in (research) practice is usually dominated by philosophers and ethicists. Consequentially, prevalent issues in this discourse are, for example, what kind of ethics is needed to control research and what the limits of an ethically framed codifying of good scientific practices are.

My contribution aims to develop a sociological perspective on the relation between ethics, research and technology. The sociological tradition was mainly interested in ethics as a way of shaping life-world practices, as a form of informing and (self-)controlling social action. However, the significance of ethics today is by no means limited to forms of individual biopolitics. Focusing on ethics as being relevant for the individuals' life is no longer sufficient. Today, we have to recognise that ethical and moral categories have become politically significant. They are part of many governance discourses, in particular those where technology conflict management is of importance. Ethicisation, in this view, refers to the fact that many conflicts about technology are conducted with explicit reference to ethics and morality, rather than exclusively or primarily in categories of risk – as was the case for many of the discussions and debates about large-scale technologies from the 1960s onwards.

What are the consequences for technology governance if ethics has become the main semantics of governance? With regard to publicly contested research areas such as biomedicine I will show that ethicisation is associated with changes in expectations which affect both the way of legitimising political decision-making as well as science in its advisory capacity. If technology controversies are negotiated mainly in terms of ethics (and not, for example, in terms of risk), i.e. if ethics has become the relevant governance semantics, politics as well as scientific expertise will be affected: the legitimisation of political decisions is challenged, expertise production is taking other forms, and lay citizens' participation as a way of producing complementary expertise becomes more important.

Session
Ownership practices in research cultures
Friday, June 11, 2010 / 10:30 – 12:00 / Edu4you

Cultures of knowledge and their corresponding cultures of authorisation

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Innovation policies are contradictory. On the one hand, attempts of an increasing homogenisation of Intellectual Property Rights are observable with the aim of a global regime. On the other side, policies of innovation try to bring together different scientific disciplines as well as fundamental and applied research within a "mode 2" form of knowledge production. This constellation provokes new conflicts about the appropriation of innovative knowledge. The corresponding conflicts are mirrored in the open source movements, but also in increasing debates over the scope and meaning of patents. In present innovation systems, diverse cultures of knowledge get into contrast. They differ fundamentally with respect to their logics of authorisation. The process of authorisation generates a symbolic relation between the knowledge producer and the knowledge product which entails three functions: it should generate accountability with respect to the validity and utility of the resulting knowledge or product, it should ensure the addressability of risk assumptions, and it should facilitate the reputational and economic reward of the author.

Empirically, this perspective should be demonstrated on the example of the life sciences and of the machine tool industry. If we distinguish between explicit versus implicit knowledge on the one hand, and decontextualising versus recontextualising applications on the other, then, by combination, four ideal types of knowledge cultures can be made out: (1) Decontextualising and more explicit knowledge cultures (as e.g. pharmaceutical chemistry) gain their results and technologies from well controlled experimental settings. The inherent innovation is mainly authorised by patents. (2) Decontextualising and more implicit knowledge cultures we see in the cases of biotechnology and machine tool building. Excellence in machine tool building even after long waves of standardisation and automation - which following Nonaka and Takeuchi may be described as knowledge explication - is still based on large amounts of handcraft expertise. The implicated knowledge is bound to the firm or to the industrial district and hence authorised by trade marks or protected origins. Patents are neither feasible nor necessary. Biotechnology is an interesting hybrid case here, since biological organisms can reproduce themselves. Hence the biotechnological innovation needs no complete scientific understanding ("Bastelwissenschaft", cf. Knorr-Cetina), but patents are feasible since one may get repeatable products. (3) Recontextualising and more implicit knowledge cultures can be exemplified with the professional application and recombination of knowledge and knowledge products in particular physical and socio-technical environments, e.g. by a doctor proscribing a drug to an individual patient. The authorisation here is based on professional certificates, local embeddedness and social trust. Patents may be opposed, since they shift profits upstream to the more decontextualised knowledge producers. (4) Finally, recontextualising and more explicit knowledge cultures can be discovered in the case of scientific disciplines which are focusing on undesirable side effects of technologies (e.g. environmental medicine). At first sight, their results were often conceived as "negative innovations" since they interfere with the authority of the other knowledge producers. Yet in the long run, they enhance the authorisation regimes by setting more systematic health and environmental standards. Thus we try to describe the process of innovation and authorisation as entangled and heterogeneous. We assume that a homogenised global patent regime cannot be responsive to its conditions.

Re-stabilizing entanglements of research and innovation processes in university-industry collaborations

Tofte Brenneche, Nicolaj
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This presentation puts focus on the challenges of managing university-industry collaborations for innovation within sustainable energy. I will present initial empirical findings based on a pilot study along with a research design for further analysis.

For years we have witnessed how universities are systematically enrolled in a politico-economical agenda for building globally competitive knowledge economies. This development has spurred a wide-spread increase of research focusing on new practices and forms of knowledge production, the rise of the so-called entrepreneurial university (Etzkowitz) and the consequences of research becoming, or is intended to become, a more integrated and measurable part of business and innovation.

However, while this development has been analysed from many different angles, a more in-depth understanding of how the entanglement of research and innovation plays out in practice still remains to be developed. For example, questions that need further exploration include how the overall agenda of collaborative innovation and economic impact of research is translated into specific collaborative modes of knowledge production and how new management practices evolve in collaborations.

In my research I approach these questions by empirically tracing how dilemmas and risks of mixing diverse interests (such as different ownership rationales) in collaborations for innovation are translated by managers into actual strategies, priorities and decisions. The management practice that emerge from this represents a particular point of focus in my research by the empirical exploration of collaboration cases will include studies of how reseachers and participants from industry interact to build collaborative practices across organisational boundaries.

In my presentation I would like to go through some initial empirical findings based on an ongoing pilot study of emerging European university-industry collaborations for sustainable energy innovation. These findings suggest that collaborations tend to destabilize a number of well-established notions and rationales of knowledge production. The destabilization, however, do not simply produce chaos (although collaboration can be both difficult and potentially full of tensions). My findings suggest that collaboration for innovation involve a crucial element of institutional entrepreneurship whereby the collaborative partners strive to re-stabilize ways of managing and organizing knowledge production. In this process of continuous re-stabilization, research and innovation become entangled in ways which are irreducible to what we might refer to as traditional notions of academic research practices and – on the other hand – traditional modes of commercial territorialization of knowledge. These findings suggest that we face new collaborative forms of knowledge production and consequently new entrepreneurial modes of managing and organizing across boundaries which challenges a wide range of established theories and practical notions of the relationship between academia and industry.

In order to analytically grasp the dynamics of collaboration entanglements I employ an analytical framework based on Actor-Network Theory (ANT), in particular the work of Michel Callon and Bruno Latour. Furthermore, I employ George E. Marcus' approach to multi-sited ethnography in order to maintain a high degree of flexibility and analytical adaptability in tracing the efforts of stabilizing collaborative ties.

Hacking genomes. A study of the ethos of open source science

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SISSA and University of Milan, Italy

Crack the code, share your data, have fun, save the world, be independent, become famous and make a lot of money. In this work I link the public image of scientists devoted to open source genomics to the ethics and myths of the hero of informational capitalism the hacker – and I investigate their role in the changing relationship between science and society.

The most common narrative about open source science tells that once upon a time, ethics in science was a good thing: sharing, disinterest and the common good drove the everyday work of scientists. Then evil corporations entered science and changed the rules of the game, patenting life and enclosing the commons. Now we have new tools and a new open science spirit that can be used to defeat evil and to let information flow freely again.

To present a different viewpoint on this story, I use the hacker ethic as an heuristic tool. How is the new open science ethic related to the hacker's one? In fact, several components of hacker ethics have a deep historical dimension, having continuously present in the 20th century's narratives and normative accounts of science. Furthermore, as several scholars have pointed out, the scientist's ethos and norms are means of positioning into the changing social contract between science and society, capital, industry. In particular, drawing from postweberian theoretical tradition, I intend to analyse the role of this changing ethos in the establishing and functioning of current informational capitalism.

My argument is supported by an empirical research based on case studies located in the postgenomic age and distributed across the United States and Italy. They have been chosen according to the following selection criteria: they are highly mediatized research projects; the problem of access to – and sharing of – the data emerged as a crucial issue and they used open source tools. These include the Sorcerer II, the Craig Venter Institute's ship that circumnavigated the planet to collect and classify marine microbial genomes; the open access avian flu database GISAID, established by the Italian veterinarian virologist Ilaria Capua; Harvard's George Church, nicknamed "open source junkie" and his Polonator, the open source genome sequencer; DiyBio and its network of amateur biotechnologists.

To examine these cases I collected communicative materials from multiple sources (journalistic articles, interviews, scientific papers, press releases, websites). Then, by means of theoretical and qualitative discourse analysis, I focused on the images of scientist and his/her norms, virtues or ethics. Finally, I crossed the results with an analysis of the socioeconomic ecologies of these same cases: their economic alliances and scientific collaborations.

The public dimension of these open source biotechnologists and the justifications they produce in order to position themselves into the current science configuration contain components of the hacker ethic such as heresy, independence and hedonism. Finally, they seem to be similar for scientists belonging to public research institutions or to mixed economic configurations, for free riders who drain money from venture capitalists or amateurs external to the official science. I argue that these scientists and their public virtues can be a rich model for the transformations undergoing in both 21st century's science and informational capitalism.

Session
Differences that matter in ordering research
Friday, June 11, 2010 / 15:00 – 16:00 / Main hall

Once upon a time in the East: From stagnant departments to entrepreneurial research groups?

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This paper traces the recent transformation of a prestigious Czech basic research institution in the physical and biosciences and its ambition to become a 'world-class or global research organisation' in the context of developments that have been termed academic capitalism, Mode 2 or the triple-helix of university-industry-government relations. These conceptual frameworks draw attention, amongst other things, to increased marketization and intensifying commodification of knowledge, particularly to close relations between universities and industry and a rise of for-profit activities of research institutions. While these phenomena are often heralded as global – albeit based on research predominantly carried out in the global West – there are differing assumptions about how new entrepreneurial and managerial research cultures relate to more traditional practices and values such as vocation, collegiality, and in the case of post-socialist science to bureaucratic-administrative management practices and nepotism. Based on participant observation and individual and group interviews with working scientists I will analyse how different types of laboratories in this institution were organised in ways that ostensibly performed distinctions of East/West, local/global, and traditional/modern. In particular I will focus on how new entrepreneurial practices of the laboratory that aligned with 'Western laboratories' and prized output, performance measurement, hierarchical leadership, and the circulation of researchers on short-term contracts substantially relied on, yet explicitly devalued, sociability and an ethics of care. The latter were fostered among researchers both within and outside the laboratory but displaced to the peripheries of knowledge production. A central question is what consequences these constitutive exclusions have for working scientists and for research institutions and how they can be taken into account in science (policy) studies that tend to embrace academic entrepreneurialism.

Performing change and longing for continuity: Nanoscience and -technology as a field in the making?

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Over the last decade, nanoscience and -technology (NST) was widely introduced and implemented as a new and emerging field of technoscientific knowledge production. This process was accompanied and driven by a wide range of expectations and imaginations of what research and innovation should yield and of how the knowledge production process should be organized. For example, many of the debates of innovation politics gravitate around NST as driving force of prosperity in the context of a knowledge-based economy, as a supplier of solutions to pressing societal problems and as a promoter for new institutional arrangements between science and industry. This conceptualizes NST as a technopolitical laboratory where new forms of knowledge production can be tested, rehearsed and verified and radical organisational, epistemic and social change can be promoted. By reaching out to research fields which so far have not been regarded as being placed in these contexts in such explicit ways and attracted by the availability of unprecedented funding opportunities, the question is, how do scientists position themselves and their research in this context.
Based on interviews with scientists with diverse disciplinary backgrounds who are related to the field of NST—conducted within a more comprehensive research project on NST in the Austrian context —, we will analyse in what ways they aim to perform these changes triggered by being placed in the context of NST. What strategies

do they develop in order to manage and reconcile epistemic and normative prescriptions embedded in NST with those seen as given in the respective field? On the one hand, scientists bet on the "new" in order to preserve or to strengthen the position of their research field or of them as individuals, and thus often accepting discontinuities. At the same time, they attempt to re-establish coherence both as epistemic subjects as well as regarding their "home" discipline. Depending on the contexts, NST is either framed in terms of a break(up) or embedded in a successive history of a discipline. Each of these strategies seeks to emphasize a set of specific values of being a scientists and doing science. Likewise, NST is re-interpreted and framed in particular ways. The conclusion will feed back our observations to the idea of NST as a wide-ranging "technopolitical laboratory" through which innovation policy, on the one hand, strongly promotes new ways of knowledge production, and, on the other hand, political techno-imaginations are interpreted strategically by scientists against the background of existing practices, interests and values.

Session
Ethical and societal responsibility in research practice II
Friday, June 11, 2010 / 15:00 – 16:00 / Chapel

A whole new set of lab responsibilities? 'Responsible innovation' and its consequences for research practices

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Science policies in the US, Europe and elsewhere have in recent years called for 'responsible innovation' in science and technology. While the concept resists simple definition, it expresses a political ambition to guide research outcomes simultaneously towards increased practical relevance (contributing to technological innovation and economic prosperity) as well as towards enhanced socio-ethical responsiveness (integrating social and ethical considerations in research decisions) on the assumption that these two goals are complementary if not reinforcing. The emphasis on responsible innovation in policy discourse however, may have implications for academic researchers, who increasingly face new, and possibly conflicting, social responsibilities (both in terms of having to be more entrepreneurial and having to integrate broader socio-ethical dimensions of research), in addition to the academic responsibilities that traditionally come with the profession such as publishing in highly-cited journals and acquiring research grants.

How do efforts to implement these new policy mandates affect laboratory researchers and their daily practices? Can the newly envisaged social responsibilities be effectively integrated by modulating existing processes, or does the concept of responsible innovation entail more fundamental changes in research practice? Social scientists and engineering ethicists, among others, have sought to address these questions in the laboratory, assessing the 'micro-level foundations' for responsible innovation.[2] The recently developed framework of midstream modulation opens one potential avenue to assess and enhance the 'responsive capacity' of laboratory researchers to the new types of responsibility with which they are now faced (Fisher et al. 2006). Midstream modulation is a form of interdisciplinary collaboration that combines participant observation methods with distinct engagement tools, allowing for collaborative exploration of research decisions in light of their societal and ethical dimensions (Fisher 2007).

This paper will present and discuss the results of two 'laboratory engagement studies' (Schuurbiers & Fisher 2009) that aimed to apply midstream modulation specifically with respect to encouraging laboratory researchers to reflect on the broader socio-ethical context of their work. Regular application of the engagement tools both made the broader socio-ethical context of research *visible* in the laboratory and encouraged research participants to *critically reflect* on this broader context. Increased responsiveness to societal concerns did not come at the cost of academic and professional responsibilities. The studies are part of the NSF-funded Socio-Technical Integration Research (STIR) project (Fisher and Guston 2008), a coordinated set of twenty laboratory engagement studies to assess and compare the varying pressures on – and capacities for – laboratories to integrate broader societal considerations into their work.[3] In addition to discussing the results of the laboratory engagement studies and of the STIR project broadly, this paper will reflect on the wider implications of integrating socio-ethical assessment with ongoing and future research dire

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[2] Personal communication Paul Ellwood.
[3] See: http://cns.asu.edu/stir/

Responsibility on the move: Societal responsiveness in shifting epistemic living spaces in the life sciences

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A number of recent theoretical contributions diagnose an increasing co-evolution of science and society, and argue that societal rationales ever more closely impinge on and enter scientific practices and work cultures. Often, such as in much of the discussions around the term "socially robust knowledge", these processes of co-evolution are expected to foster a greater responsiveness of researchers towards societal concerns, or even an increased and conscious societal responsibility of science. However, detailed empirical analysis on how processes of co-evolution actually impinge on concrete research cultures and practices, and how this relates to science's responsiveness to societal actors and rationales, are mostly lacking.

One of the most salient features of co-evolution is the rise of a set of powerful symbolic terms, which are rehearsed as guiding values in different arenas such as science, policy or the media. Values such as excellence, societal relevance, mobility or transparency are supposed to foster both the epistemic and social development of science as well as its integration in and importance for society. As has been well shown for concepts such as transparency/audit, understanding the complex processes in which these values are translated and become effective in tacitly governing scientific practice is crucial for grasping the dynamics of contemporary research cultures.

This paper sets out to explore how the dynamics of this tacit symbolic governance of research practices impinge on the opening up or closing down of these practices in terms of their responsiveness towards specific societal interests, actors, and rationales. Focussing on two key values, mobility and accountability/transparency, my paper will analyse this question using biographical interview data with life scientists in Austria[4], and trace how these values frame and figure in their epistemic and career narratives and decisions, and how they impinge on how they relate to society and think about issues of societal responsibility.

In conclusion, my paper aims to contribute to a more refined and nuanced debate of the (pre)conditions for and limitations of societal responsibility in current research cultures and practices.

Session
Conflicting orientations in research practices
Friday, June 11, 2010 / 15:30 – 16:00 / Edu4you

Impact factor frenzy: Policies and practices of scientific publishing in the Czech Republic

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Publications in impact factor journals have become a golden egg of research evaluation procedures. In the Czech Republic, they constitute a key item evaluated, allegedly representing internationally certified quality of knowledge in basic research. A journal's impact factor is conceived of as a measure of the quality of an article published in a journal, and it is converted by a complicated function into an amount of "points" in the evaluation system. In the current version of the evaluation framework, from 5 to 350 points can be obtained for an article in an impact factor journal (and there is a special category for articles in *Nature*, *Science* and *Proceeding of National Academy of Sciences* awarded 500 points) while the maximum amount of points for a book is 40.

In specialized literature, many types of criticism of the impact factor have been put forward, from its geopolitical deflection in favour of Anglophone outlets to its bias towards publication and citation practices in natural sciences. Drawing upon these critical studies, I examine how the value and function of impact factor journal publications is discussed and assessed in the Czech academic community and which strategies are employed by researchers in order to increase the number of their impact factor publications. I mainly focus on the roles (different across disciplines) these publications play in epistemic practices and scientific communication; the experience of Czech researchers with publishing in foreign impact factor outlets; and the proliferation of local impact factor journals. I aim at contributing to the analysis of intended and unintended effects of evaluation procedures on scientific publication infrastructures and practices, and the dynamic of centre-periphery relation in "global" science.

Empirically, I draw on an analysis of public and semi-public debates provoked by recent reduction of core funding for academic institutions, and on research interviews, individual and collective, carried out with researchers across disciplines and with editors of Czech scientific journals.

Between science and technology: multiple orientations within epistemic cultures

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STS concepts like "technoscience" (Latour 1987, Haraway 1997, Hottois 2004) and the "triple-helix model" (Etzkowitz / Leydesdorff 1997) point at an (increasing) convergence of science and technology, universities and industry, or the quest for understanding, control and production. A closer look at the micro-level of research practices and research cultures reveals a more complex situation. On a rhetoric level, allusions to basic research or, alternatively, applied research and future applications seem to change with the context of discourse (Calvert 2006). On the practical level, basic and applied research seem to be indiscernible in the realm of emerging technosciences, like nanotechnology, biotechnology or the new neurosciences. Epistemic objects turn into technical devices (cp. Rheinberger (1997), which can be applied in laboratory research as well as in industrial production. This multiple applicability of instruments and objects is closely linked to the emergence of hybrid institutions, combining basic research and product development (cp. Shorett et al. 2003).

Analyses of the respective epistemic cultures result again in another picture. Ethnographic interviews with scientists from different fields[5] show that a multiple orientation towards knowledge production and product development is perceived of as problematic in certain situations where the two orientations cannot be combined smoothly in every-day research activities. The presentation will present the results of this empirically grounded analysis in more detail. It will give examples of reported conflicts resulting from a multiple orientation towards knowledge production, product development and other contexts of agency. Based upon this account, the following questions will be addressed: how are these different orientations stabilised and how do they become effective (both within science and in the public discourse)? The concluding discussion will focus on a characterisation of technoscientific cultures in more general terms. It builds upon the conception of epistemic cultures put forward by Knorr Cetina (1999).

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[5] These interviews have been conducted by the author within the research project "Nichtwissenskulturen" funded by the German Federal Ministry of Education and Research (BMBF) between 2003-2007 at the University of Augsburg.