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Epistemic and Learning Cultures at the University of the 21st Century (Proceedings)

Praxis is more likely to reveal the odd than Theory. If we do not identify science immediately with theory, but consider it as a field of practices – just like other societal fields – we see the unorganized, the non-simultaneous and the contradiction that strikes it. Boundaries between sciences and other societal institutions and domains are diffused. Also for the practice of research, it becomes obvious that the principle of science works in each domain in a different manner and that the acting stakeholders tend to adopt patterns of interpreting and acting that do not originate from the field of science, but nevertheless have an impact on it. In “Epistemic Cultures” (1999), Karin Knorr Cetina reveals those patterns and impacts on the basis of her ethnographic studies in the domains of nuclear research and molecular biology. The title of her book therefore questioned that scientific progress would comprise a homogeneous and consistent cognitive process and illuminated that scientific practice entails specific and unique ‘mechanisms’ of producing and implementing bodies of knowledge in a certain scientific domain.

Following this self-critical reflection, on December 5 and 6, 2013, an international conference on “Epistemic and Learning Cultures at the University of the 21st Century” took place at the Karlsruhe Institute of Technology (KIT). The conference - funded by the German Research Association (DFG) - is part of the project „Lehre hoch Forschung“ (2012-2016, funded by the Federal Ministry of Education and Research (BMBF). It was organized by the recently founded chair for the research on teaching and learning, by name Ines Langemeyer, who held this position as an interim professor, in cooperation with Michaela Pfadenhauer, Institute for Sociology/House of Competence and Martin Fischer, Institute of Vocational and General Education (IBP). The aim of this international and interdisciplinary exchange was to discuss from diverse disciplinary points of view and from an international perspective the potential of research-oriented teaching and learning methods as well as schemes like the “Teaching Quality Pact” for higher education funded by the Federal Ministry for Education and Research. Epistemic and learning cultures were not only regarded as a didactical matter, but also discussed in terms of changing policies in research and science, as a way of dealing with competitive factors and expectations for universities’ organizational development and as a problem of the emerging academization of the employment sector.

Combined with a short introduction to her conceptual and methodological approach to “Epistemic cultures”, *Karin Knorr Cetina (University of Chicago)* presented results of her recent studies on the trading on global financial markets which illustrated a transfer of this approach to “information knowledge culture”. Thus, her keynote speech displayed a productively irritating mirror for today’s competition among universities. In the light of the cultural meaning of stock market activities it became worth considering how indicators (that are nowadays automatically produced by algorithms for the trade on global financial markets) gain power over stock brokers and determine their “epistementality”: „Epistementality“ is

defined as a mentality that determines convictions about the correct distribution, handling and application of knowledge. Whilst stock brokers – similar to scientists – are not confronted with definite and verified information, the significant value for them is not so much in the knowledge itself – it is rather the fact that the information is *new* that makes it relevant for the stock exchange trading. Consequently, not the history of this knowledge, the experience behind it but the mere difference of information (knowledge) is crucial. Thus, the distinction between scientifically proved knowledge and announcements, false reports or rumors is levelled. The mere information advantage of anticipated movements of money in the markets provides benefits to the respective party. Regarding the institution of the university, the question came up what kind of power the constantly promoted scientific indicators exert within the scientific practice (beyond a possible neutral gain in knowledge) and which epistemic cultures they promote: Since they are formed and used to measure scientific achievements to stir up the competition between universities and their research activities, don't they create a dispositive for scientists just like the flow of (true or false) information for exchange dealers?

In his speech, *Bernhard Schmidt-Hertha (University of Tübingen)* illustrated one aspect of this problem: He criticized the insufficiency of performance indicators that focus on the procurement of third-party funds, on the acquisition of research awards and the like when it comes to the evaluation and rankings of ideal locations to study – while the quality of teaching is largely neglected. Furthermore, the relationship between research performance and teaching quality is hardly investigated. Another aspect was brought up by *Jochen Gläser (TU Berlin)*. Against the background of an international comparative analysis, he pointed out differences in subsidies policies and its significance for innovation processes. In particular, the maintenance of an institutional variety was emphasized to be conducive to innovation. However, this variety might suffer if universities adjust to New Public Management and to a stronger orientation towards external funding. A comparison between the Netherlands and Germany showed how the smaller country restricted the variety of research activities and, as a result, created less innovations in important research activities such as the Bose-Einstein condensate, evolutionary biology, computerized corpus linguistics as well as Large Scale Assessments. At the same time, the bigger neighbor country – despite the competitive pressure – managed to maintain a greater diversity. *Uwe Wilkesmann (TU Dortmund)* focused on the impacts of university governance, using a comparative analysis of transactional and transformational leadership. A regression analysis about motivations and orientations of lecturers revealed that the typical corporate management that is based on performance incentives and control (such as transactional leadership) instead of trust, respect and intellectual stimulation (such as transformational leadership) has very little impact on the improvement of teaching quality. Learning cultures are therefore better supported by transformational than by transactional leadership styles.

Several empirical findings illuminated some facets of the current challenges of university education. *Cathrine Hasse (University of Aarhus)* reported how universities adopt elements from everyday culture by illustrating how science fiction is used by university teachers in natural science to motivate students and how motives from books and movies constitute the subjective meaning of learning contents. In the course of teaching “hard facts”, lecturers even

go as far as to pass on elements from everyday culture to the students deliberately. *Monika Nerland* and *Karen Jensen* (*University of Oslo*) considered the question to what extent teaching is influenced by expert cultures outside universities by using the example of law students. Following Knorr Cetina's approach, it was analyzed how the practice in law firms – as soon as they get in touch with it – have a greater impact on law students than university itself and thus shadow the influence of science in the process of academic enculturation. Thereby, the question was brought up how university teachers may deal with the rivalry and rapid changes of these expert cultures – and how they can actually influence and shape the epistemic and learning cultures of the new generation? Using the example of their study about cultures of studying under the conditions of 'Big Science', *Michaela Pfadenhauer*, *Stefanie Enderle* and *Felix Albrecht* (*KIT*) illustrated another problem related to the shape of universities that comes up if science and teaching are detached from each other. The study deals with the fusion of the "Forschungszentrum Nord" (research centre of the Helmholtz society) and Karlsruhe University to the "Karlsruhe Institute of Technology" (KIT). By using this example, the question of how to integrate Big Science in the courses of study is brought up. While the main focus of the KIT has been on integrating research center scientists into teaching, Pfadenhauer et al. are using a different approach by analyzing what constitutes "studying" nowadays and if there's (still) a way to link it to research and science. By introducing the term "cultures of studying", not only the heterogeneity of studying is highlighted, which reaches – unlike the empirically investigated business sciences, mechanical engineering and physics – beyond the borders of a single discipline. Therefore, a theoretical supplement to the concept of "epistemic cultures" that is postulated for the latter seems to be limited to the creation and assertion of knowledge. It was suggested to expand it by knowledge transfer and acquisition of knowledge – in a word: "learning cultures".

Gerd Gidion and *Simone Löffler* (*KIT*) investigated the significance of job-related social and self-competencies in engineering studies at the KIT. The evaluation methods, exemplarily implemented, were used to scrutinize the mechanical engineering students' competencies; results were presented for a methodological discussion. *Isa Jahnke* (*University of Umeå*) introduced an approach to teaching-learning research by using an investigation about digital and mobile media (iPad). The methodology was based on the design-approach and used systematically to ask when and why such media is used. The results showed that particularly by leaving learning objectives open to more than just *one* possible answer, the formally designed teaching was more flexible to embrace informal learning processes (including surface and deeper learning). Furthermore, by visualizing learning processes, learning activities became more motivating than without. *Anke Diez* and *Katrin Klink* (*KIT, Human Resource Development*) explained how the improvement of teaching and learning is more than just a task of the university's facilities for further education in university didactics, but, following the St. Gallen Management Model, rather an integral part of a systematic staff development at the KIT. The challenge is to change strategies, structures and the culture at the same time and to act on the different levels of the organization, from particular institutes and teams up to the individuals. In his talk on the relationship between politics and science, *Kari Kantasalmi* (*University of Helsinki*) referred to Luhman's contingency formula to investigate matters such as research, development and innovation in the context of possible modifications. In doing so, he stressed the different perspectives on universities being either a

structure of a knowledge society or, in a broader sense, something that should be taken into account as learning cultures and learning environments. *Ernst Schraube* and *Niklas Chimirri* (*University of Roskilde*) discussed the practices of a learner-centred approach by investigating the curricula of Roskilde University and the changing cultures in studying via using new media in teaching. Their demand was to develop learning technologies and learning conditions in a consistent manner from the standpoint of the learning subjects instead of merely subordinating the latter to technological requirements and other institutional conditions.

Rita Berger (*University of Barcelona*) reported on Spain's way of using universities as a temporary solution for compensating a weak employment market during times of an economic crises – even though Spanish universities, struggling with financial problems themselves, are not prepared for this task. Thus, a development of universities for their future tasks is impaired. *Jesper Eckhardt Larsen* (*University of Aarhus*) reflected on the historical role of humanities with regard to the self-awareness and the self-concept of modern societies and their epistemic cultures. *Martin Fischer* (*KIT*) discussed the question whether and how universities can refer to the professional realities of their graduates. For this purpose, a controversial debate that has been discussed for many years in the context of vocational school teacher training was unfolded: Should prospective vocational school teachers in the industrial-technical sector study traditional engineering sciences – even though these courses do not include the actual work or the training of skilled workers? Or should the job-oriented study courses that have been established at some German universities be favored? In these courses, the focus is on professional work and on the instruction of skilled workers. For the students, they bring along a minor polyvalence. However, up to now these approaches have been rather isolated examples. Even though there is a considerable amount of reasons that plead for the last-mentioned alternative, knowledge inherent in academic disciplines follows a different logic than the professional knowledge that is inherent in jobs on the labor market. *Ines Langemeyer* (*University of Tübingen*) focused on general changes of society in the course of technology development and used this perspective to rethink the role of universities in the 21st century. The extensive use of information and communication technologies (in combination with other technological components and the sciences) nowadays serves as the backbone of society. In her opinion, the power that is hereby formed causes problems to which none of the modern institutions are hitherto clearly responsible for: the question of the absent societal legitimacy of technological (partly and fully) automatized expert systems that are making a number of relevant decisions, the doubtful independence and neutrality of technological development of private and political interests, and finally the significance of these areas of practice for the unresolved development and formation of corresponding competences (such as new cooperative and scientified types of agency) that have a provably high impact on sustainable development. University, thus the thesis, could reclaim expectations and responsibilities on these levels and win a new mandate, new legitimacy and new societal strength in the competitive set with other institutions.

The contributions to the conference will be collected and published by Juventa.

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