How Well Do ‘Facts’ Travel Project

Public Seminars Summer Term 2007

25 April - Steffan Mueller-Willer (Exeter):
Leaving Inheritance behind: Wilhelm Johannsen and the Politics of Mendelism

In 1912 Wilhelm Johannsen codified the distinction of genotype and phenotype to distinguish a space of heredity with an independent logic and metrics from another, physiological and developmental space represented by the cytoplasm and standing for the organism. In addition, for the elements of the genotype, he proposed the notion of the gene. This terminology was gradually taken up by the genetics community. Johannsen’s codification, which was based on breeders’ practices of separating ‘pure lines’, has profoundly marked all of twentieth century genetics. What has largely escaped the attention of historians of science, however, is the polemical context in which Johannsen made these distinctions. In introducing his neologisms, Johannsen explicitly turned against ‘historical’; notions of inheritance prevalent in eugenics and breeding. Yes, he even denounced the terms ‘heredity’; and ‘inheritance’;, taken in their everyday sense, as inadequate to capture the ‘modern view of heredity’. ‘Ancestry by itself is irrelevant; dispositions are decisive’, as he put it in his 1905 textbook Arvelighedslærens elementer. In making such statements, Johannsen was far from denouncing eugenics and breeding as ‘unscientific’; as such. He rather wanted to put these applied sciences on a scientific, and that meant for him: thoroughly instrumental and constructive basis, with synthetic chemistry as a guiding paradigm. In my contribution I will discuss Johannsen’s roots in industrial research and how his view of Mendelism resonated with certain political ideals. Science, for Johannsen, was a modernizing force in as much as it was able to cut ties with tradition.

9 May - Jill Russell and Emma Byrne (Primary Care PS, UCL): *The Use of Evidence in Health Care Policymaking: a Study of Priority Setting in Primary Care*

How do health care policymakers use research evidence in practice? We are currently exploring this question through a qualitative research study of the deliberations of a group of people charged with prioritising health care in a local primary care trust (PCT), exploring specifically how they talk about, deliberate and reason with evidence. Other recent empirical work in this area highlights that evidence is not so much 'put into practice' as suggested by the dominant discourse of evidence based medicine, but rather is dynamically constructed through local and contingent practices of sensemaking and argumentation. In this presentation we will draw upon rhetorical theory to suggest that policymaking can be viewed as the formal struggle over ideas and values, played out by the rhetorical use of language and the enactment of social situations. We argue that a rhetorical perspective requires us to redefine what counts as 'rationality' in the policy process - which must extend from what is provably true (by logic) and probably true (by Bayesian reasoning) to embrace, in addition, that which is plausibly true (i.e. can convince a reasonable audience).

23 May - Gabriele Gramelsberger (FU Berlin): *The Obsolescence of Imprecise Facts*

“Hard facts” are linked to measurement, calculation and accuracy in science. During the centuries the comprehension of `how accurate facts should be´ has changed. Measurement as well as calculation are creating facts of increasing accuracy. The paper charts the development of calculation methods done by hand to computer based ones, its increasing accuracy but also the obsolescence of imprecise facts in scientific theory, e.g. climate

research. Thereby the accuracy of facts refers not only to the exactness of the calculations and measurements but also to the increasingly complex constructions of facts in science.

6 June - Natalie Trussard (Universite' Libre de Bruxelles): *Public Controversy around GMOs: a Good Case to Think in Terms of Travelling Facts?*

In France, in 1999, few actions were undertaken against experimental GMO sites that belonged to well-known public research institutions. Two actions in particular received a larger media covering, the first involving the INRA - Institut National de la Recherche Agronomique on the 2nd of June, and the second involving the CINRAD - Centre de coopération Internationale en Recherche Agronomique pour le Développement on the 5th of June. Scientists were very shocked and wondered whether there had been a misunderstanding, because the protesters had criticized and questioned the role of public research institutions, rather than pointing at international companies. This is the scene with which I want to open my contribution. Indeed, it offers a huge advantage: while a lot of threads are linked to GMOs, it is nevertheless impossible to reduce them to only one of those dimensions. In other words, this scene makes particularly visible that GMOs are not exclusively scientific, sociological, economical, political, or legal and so on. GMOs are indeed an imbroglio of power and knowledge which demands meticulous attention to how those threads are linked to each others. And, while their meanings and relations have been transformed for the last three decades, a new situation and functioning of sciences with regards to politics and economics has emerged, what the French historian of science, Dominique Pestre, calls a new "régime de savoir". In my contribution, I will briefly list some of the different ways in which the GMOs act and exist, i.e. how they take part in the controversy as described in the opening scene. I will also present the notion of "régime de savoir" as it has been developed by Pestre in his book "Science, argent et politique: Un essai d'interprétation" written in 2003. Indeed, I believe that the "régime de savoir" concept is an interesting tool to shed light on what may be happening today in the new scientific functioning centred on biology and biotechnology, given that each of the way GMOs exist is dependent to the others in this new régime de savoir.

13 June - Tirthankar Roy (Economic History, LSE): *Did Useful Knowledge Contribute to Divergence? The South Asian Experience*

Did useful knowledge contribute to increasing international inequality since the nineteenth century? Did the West know more than the non-West at a date such as 1800? Was the West better-placed to learn faster? Current debates over these questions have tended to neglect the South Asian experience. The paper is an attempt to bridge this gap. Based on a review of scholarship, I answer the first question in the negative. The answer to the second question, however, is more complex and more tentative. There are four grounds on which it is possible to suggest, if provisionally, that early modern South Asia lagged early modern West in the potential to develop future capability, especially in manufacturing. These are, existence of institutions that could facilitate learning and innovation, extent of inter-industry transactions, level of development in mining and metallurgy, and the predominance of irrigation in state patronage to useful knowledge in South Asia.

20 June - Erika Mattila (LSE):*The Brokers, the Conformists and the Stubborn: the Travellers Crossing Disciplinary Divides in Modelled Environments*

Production of new, interdisciplinary knowledge, especially in technically demanding modelling environment, requires adoption of knowledge from different, collaborating fields. To achieve this kind of cross-fertilisation is not, however, a simple or straight-forward process. This study explores the interdependence of technical artefacts, visual representations, computational

algorithms and research questions embedded in modelling practice and related to the networks of expertise and collaboration. This interdependence allows us to examine in detail the ways in which research groups with different disciplinary backgrounds actually adopt, produce and apply factual knowledge. The perspective taken in this study is that of a ‘fact’. More precisely, the focus is on the ways in which ‘facts’, which were produced in a long-term, interdisciplinary modelling practice and resulted in a set of infectious disease models for public health purposes, become accepted, acknowledged, or, perhaps, ignored by collaborative partners or in broader disciplinary contexts.

Once we observe the ways in which ‘facts’ travel across the different domains in the cross-fertilisation processes, we may sharpen our focus onto the processes of integration and disintegration of knowledge. Why some ‘facts’ become unquestionably part of the ‘canon’, the specific way in which questions concerning disease transmission or data augmentation are presented? Could we characterise the various roles ‘facts’ are given during building and application of models? To address these questions, this study traces the research problems, techniques, data, and computational algorithms that enhance or prevent the ‘spread of facts’ across heterogeneous modelling practices within research groups based in Finland and the UK. This study is based on three types of data: long-term ethnographic research on infectious disease modelling, analysis of published documents and articles and interviews with members of collaborative network engaged in epidemiological or statistical modelling.

The key findings suggest that some ‘facts’ reported, for example, in a statistical context may become accepted as epidemiological ‘facts’ that actually link the documented model with the broader disciplinary tradition. Hence, these ‘facts’ may be seen as ‘conformists’ that became acclimatised in the new domain or as ‘brokers’ that try to facilitate the cross-fertilisation process between the domains. Moreover, ‘simulated facts’ (i.e. those produced by a simulation model) may gain credibility when are used in other models by anchoring the stories told by these models into disciplinary contexts. Interestingly though some ‘facts’ seem to behave “stubbornly” and require auxiliary concepts in order to become domesticated in the models. A typical example of a ‘stubborn fact’ is actually ‘disease transmission’, which needs to be addressed through the simplified transmission mechanisms that allow it to be expressed in mathematical algorithms. These findings, hence, give us a new insight into the epistemologically challenging level of interdisciplinarity by tracing the possible patterns of integration or disintegration of knowledge and by showing how the relation of disciplines is shaped during this process.