Book Reviews

Helen E. Longino:
The Fate of Knowledge
Princeton University Press. Princeton and Oxford, 2002. 233 pages.

In this book Helen Longino seeks to provide an account of sociality of knowledge that would help overcome some longstanding problems in epistemology and philosophy of science. As Longino sees it, the discussion between sociologists of scientific knowledge and philosophers of science is at an impasse. Normatively motivated philosophers and empirically oriented sociologist talk past each other because of their radically different conceptions of knowledge. In Longino's diagnosis, the principal reason for their mutual misunderstanding derives from the fact that neither group has really sorted out the relation between rational and social. According to Longino, there is a strong tendency to regard these two categories as mutually exclusive. Her central thesis is that this opposition can be dissolved if we conceptualise knowledge and rationality as social concepts. It would allow for a more fruitful relationship between sociologists and philosopher of science, and also help solve some perennial problems in the philosophy of science, for example the problem of underdetermination.

Longino discusses the background for her argument in chapters 2 and 3. In chapter 2, she describes various approaches in social studies of science and points out some ambiguities in their philosophical assumptions. She regards the empirical contributions by sociologists of scientific knowledge as valuable. She is less satisfied with the normative epistemological claims and assumptions made by the advocates of social studies of science. For example, she finds the formulation of relativism by Barnes and Bloor highly ambiguous. She traces the problem to an implicit assumption that rationality and the influence of social interests somehow exclude each other's. She finds similar ambiguities in the writings of Harry Collins, Karin Knorr-Cetina and Bruno Latour. Her general conclusion is that social studies of science leaves unresolved the problems related to normative aspects of the concept of knowledge.

I find Longino's interpretation of sociological approaches inaccurate in some crucial respects. For example, she claims that the supporters of the Strong Programme implicitly deny, "cognitive accounts – that is, accounts that appeal to agents' reasons – have explanatory value" (p. 21). This is absurd. Only a brief look at any writings by the members of the Strong Programme shows that they explain scientists' actions by referring to their beliefs, inferences, and intentions. Similarly her central claim that sociologists are committed to the dichotomy of

social and epistemic sounds highly implausible. People like David Bloor have spent a long time arguing against this specific assumption. The problem is that he has not been very successful in getting this message through to his philosophical critics.

In chapter 3, Longino turns to philosophers' responses to social studies of science. She discusses briefly responses by Alvin Goldman and Susan Haack and rightly finds them unconvincing. More extensively she discusses the views recently put forward by Philip Kitcher. She has some interesting comments on Kitcher's approach and I wish she had elaborated her critique a bit further. For example, her arguments against Kitcher's model of rational closure controversy are valuable.

Longino outlines her own approach in chapters 4 and 5. She starts by distinguishing three senses of knowledge and both empirical and normative approaches to each meaning of the term. First, knowledge can be understood as knowledge producing practices. When a sociologist understands knowledge in this sense, she is interested in practices that succeed in fixing belief in some community. This approach is contrasted by philosopher's normative attitude. The philosopher is primarily interested in processes that are able to justify the acquisition of belief. Similar difference can be found in the second sense of the term knowledge. Here the sociologist is interested in what people in a certain group accept as knowledge, whereas the philosopher is interested in which beliefs of these people are justified. Lastly, the third sense of knowledge refers to the corpus of knowledge in the community. Also this notion can be understood both

in the philosopher's and the sociologist's sense.

Longino's central claim is that the systematically different approaches to knowledge by sociologists and philosophers explain their deep disagreements concerning science. As a way out of this impasse Longino proposes that we keep these six senses of knowledge separate. Furthermore, she suggests that we can dissolve the rational-social dichotomy by taking a fresh look at some traditional philosophical dichotomies. She claims that the critics of social studies of science tend to assume that individualism, monism and non-relativism go hand in hand. Similarly 'the sociologizers' tend to assume that the opposites of these positions are a tight package. If one wishes to be a non-individualist about the subject of knowledge and pluralist about the nature of knowledge, one is also bound to be a relativist. Longino rightly points out that there is no such implication.

To overcome the rational-social dichotomy Longino proposes an integrated notion of knowledge that would help to relate empirical studies of scientific practices to normatively responsive reflections of the philosophers. Her idea is that if we start to see epistemic activities as social practices we can see more clearly their justificatory role. Instead of seeing social as an opposite of epistemic, we should see epistemic evaluation as a communal practice. For this purpose Longino sketches accounts of observation, reasoning, scientific theories and truth. These accounts include interesting ideas but they remain too sketchy to be evaluated properly. For example, she suggests that we replace the notion of truth with the notion of conformation.

According to Longino, this concept is better suited for understanding the content of scientific knowledge, because it applies to non-linguistic items of knowledge like diagrams, maps and graphs, and unlike the binary everyday notion of truth, it allows for degrees of fit. In these ways the new notion is broader in its scope of application than the traditional notion of truth. However, her discussion leaves open the question whether the notion of conformation would help us with some of the conceptual problems with the traditional concept of truth.

In chapter 6, Longino applies her account to the problem of underdetermination and also proposes a set of norms for social creation of knowledge. These norms are the most interesting part of the book. These norms regulate the critical discursive interactions in the creation of knowledge. According to Longino, epistemically acceptable social processes of knowledge production require appropriate venues for the critical discussion, an active uptake of the criticism, public standards of evaluation, and finally, tempered equality of intellectual authority. The satisfaction of these features of the idealized epistemic community assure that theories and hypotheses accepted in the community will not incorporate the idiosyncratic biases of the individuals or subgroups. Based on these norms she offers her own definitions of various faces of knowledge. She argues that her social account of knowledge helps to bridge the distance between empirically minded sociologists and normatively oriented philosophers of science. Her account certainly provides some interesting ideas for philosophers and others involved in normative issues. I cannot,

however, see the relevance of her norms for the descriptive work in science studies. Why should historians and sociologists of science use the same notion knowledge as normatively oriented philosophers? Their work should be sensitive to the conceptions of knowledge the people they study have. And as they are not evaluating the rationality of the people they study, they do not have any use for the normative notions suggested by Longino. Maybe we should leave our notion of knowledge less integrated than Longino proposes. A disunified notion of knowledge would still be compatible with the sprit of her explanatory pluralism.

Chapter 7 elaborates some of her basic ideas by comparing them to alternative accounts of social epistemology. The main problem of her discussion is its briefness. The extremely short sketches of the competing theories fail to do justice to their authors. For example, a more extensive discussion of theories of Miriam Solomon and Steve Fuller would have helped to illuminate the implications of her own approach. In this chapter she also takes up the case of creationism in order to address the worries that her norms of knowledge production are too lax to have any normative bite. She argues that her account is stringent enough to rule out current forms of scientific creationism as candidates for knowledge. I think she succeeds in this, but I wish she had used this example to elaborate further her account of normatively appropriate social processes of knowledge production.

The last chapter takes up the issue of explanatory pluralism. She uses the example of twentieth century biology to argue for the plurality of cognitive stand-

ard and aims in science. Again, I am sympathetic to her central claims, but disappointed to the programmatic nature of her discussion. For example, the notion of explanatory pluralism remains vague as she does not elaborate her notion of explanation. I wish she had taken up some recent discussions in philosophy of explanation to spell it out. Similar vagueness burdens her notion of cognitive aim.

In sum, the book promises much but leaves the reader disappointed. On the one hand, the comments on other au-

thors in science studies and philosophy of science are too often inaccurate and unfair, on the other hand the presentation of her own ideas are too sketchy to be really convincing. For those interested in her ideas, I suggest her earlier book *Science as Social Knowledge* (1990).

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Manuel Castells:
The Internet Galaxy. Reflections on the Internet, Business, and Society.
Oxford University Press, Oxford, 2001. 292 pages.

Manuel Castells & Pekka Himanen:
The Finnish Model of the Information Society.
Sitra, Helsinki, 2001. 130 pages.

In his two latest books, Manuel Castells continues the analysis of the themes of the network society and informational economy that he raised in his much debated trilogy *The Information Age: Economy, Society and Culture*, but this time to some extent in more specific contexts. While in earlier analyses Castells has emphasized the importance of information technology and the IT revolution in general, in *The Internet Galaxy. Reflections on the Internet, Business and Society* he aims at specifying the role of Internet and other computer net-

works in societal change. In *The Finnish Model of the Information Society*, written together with Finnish philosopher Pekka Himanen, Castells approaches many of the same themes and tries to scrutinize the peculiarity of the development pattern in Finland.

The Internet Galaxy is based on a series of lectures that Castells gave at Oxford University in 2000. The book is an attempt to summarize the changes and challenges that the Internet revolution has generated and is generating in the world we live in. The book, however,

does not provide any predictions of the future development, nor moral admonitions or policy prescriptions, but focuses on examining the present state of affairs. The main message of the book is that Internet changes nearly everything: "all domains of social life are being modified by the pervasive uses of the Internet" (275).

With this consideration as a starting point, Castells examines the effects of Internet from a multitude of perspectives, starting with a historical account of its formation and stressing the critical lessons that can be distinguished from the process. Castells emphasizes the unlikely intersection of three factors as the sources of the internet: big science - represented by the important research funding to computer science in the US - the significance of military research in the context of the cold war and the culture of freedom located in university campuses – individual freedom, independent thinking, sharing and cooperation. Castells notes that the key technological developments that led to the formation of the Internet concentrated around government institutions, universities and research centers, as the initiative was too expensive and risky for profit-oriented organisations. Then he goes on to examine the values and beliefs that have been shaping the development of Internet and finds a four layer structure: techno-meritocratic culture, referring to academia and science with belief in the inherent good of scientific and technological development; hacker culture, pointing to the set of values that emerged from the networks of computer programmers interacting on-line in projects creative programming; virtual communitarian culture that shaped

internet's social forms, practices and uses; and entrepreneurial culture that carried out the diffusion of Internet from the circles of technologists and small communities to society at large.

After these examinations on the foundations of the Internet, Castells starts to scrutinise the implications of the expansion of its use to societal processes. He analyses the effects on economy and business, on patterns of social interaction (the rise of virtual communities) and political processes (implications to social movements, citizen networks, governments and the rising themes of privacy and liberty related to the Internet). Furthermore, he studies the development of the multimedia, the geography of the Internet and the thesis of the digital divide both from American and global perspectives. Such a wide array of perspectives – although Castells regrets the omission of two important aspects, namely e-learning and gender perspective – provides the reader with an excellent general picture of the social and political implications and possibilities of the Internet. On the other hand, the abundance of themes covered entails an impression of superficiality in certain aspects. As the book aims at comprehending the developments at the global level and contains a great amount of general level information, there are less specific and in-depth analyses that the reader would be interested in. Some of the changes and trends could have been examined more in detail rather than increasing the themes of the book.

Especially interesting is Castells' account on e-business and the new economy as he reviews the development of the new economy after the severe downturn of the technology stocks in

2000. Castells argues that a new kind of business cycle or business pattern has emerged: as a result of information turbulences, the new business cycle is marked by increasing volatility and alternating sharp rise and fall of market valuation. Describing work in the new economy, Castells presents the notion of "self-programmable labor" referring to the ability and need of workers to organize and focus information and transform it into specific knowledge appropriate for the work task in question. The labour must be highly educated and able to take initiatives and reprogram itself in skills, knowledge and thinking according to changing tasks and evolving environment. Castells is right in emphasizing these changes in working life, but one can ask how new these trends actually are and whether they are specifically linked to the new economy.

Although Castells attaches various positive elements to the Internet revolution, he also brings forth its characteristics inclined to increase social inequality: "the elasticity of the Internet makes it particularly susceptible to intensifying the contradictory trends present in our world" (6). He underlines that the emerging techno-economic system induces uneven development by simultaneously increasing wealth and poverty as well as productivity and social exclusion. Although Castells sees Internet as a technology of freedom, the risk is that it can free the powerful to oppress the uninformed. Moreover, networks – the constitutive organizational form of the Information Age – are by nature selective, and prone to discard those segments of societies that offer little interest from the point of view of value making.

Like in some of his previous studies, in *The Internet Galaxy* Castells leans heavily on other researchers empirical investigations. This is understandable due to the extent and novelty of the object of the research. The data of the book, however, has a clear bias: due to the wide diffusion of internet and the amount of research on the subject in North America, most of Castells' empirical data and the studies he refers to point to the US. Castells acknowledges this in the opening of the book and explains that besides systematic investigation he has extended his analyses with discussions and interactions with a variety of actors in Europe, South America and Africa.

Castells both opens and concludes the book by stating that "network is the message". Indeed, for Castells almost everything can be described as a network starting from communities and social movements to networked individualism etc. The concept of network, however, is only loosely defined as "a set of interconnected nodes" (1). Although Castells has examined the notion of network more in length in the *Information Age* -trilogy, some kind of conceptual clarification – by differentiating between different kinds of networks, for instance – would have been useful in *The Internet Galaxy* considering the importance of the notion in the book.

In many sections of *The Internet Galaxy* Castells describes Scandinavian countries, and especially Finland, as model countries referring to such issues as Nokia as an example of network enterprise, the wide use of on-line banking services and the experiences of using Internet for enhancing citizens' participatory possibilities. In fact, Castells became more interested in the develop-

ments in Finland already in 1997 as he was invited to be a keynote speaker in the 30th anniversary of Sitra, the Finnish National Foundation for Research and Development. He started cooperation with the Finnish philosopher Pekka Himanen, first in Himanen's book *The Hacker Ethic – and the Spirit of the Information Age* (2001) and then in *The Finnish Model of the Information Society*. The book describes the formation of the information society in Finland and distinguishes a specific Finnish model of development. The authors state, however, that the model is more a hypothetical description – that should be tested with further studies – than strictly analytical scrutiny. Indeed, the book is the result of a rather short period of research and it is characterized by sketchy investigation aiming at summarizing the developments. This is clear in many parts of the book, but especially obvious for instance in the section that deals with the role of universities in the innovation system: the universities are described as technology-oriented and as being the "drivers and spatial centres of technology research and development" (31) without specifying or taking into account the diversified educational and research functions of universities in a multitude of fields other than strictly technological areas that have a great importance in the innovation system. Moreover, the meaning of the observation that universities are technology-oriented is not further developed at all, which is one of many examples pointing to the lack of critical thinking in the book.

The book, however, sums up many of the factors underlying the fast rise of the high technology sector in Finland that is probably interesting at least for foreign readers. Castells and Himanen start with the story of Nokia and continue with a description of the interplay between different actors in the formation of the Finnish innovation system with the particular emphasis on the role of hackers. Regional development in the context of the Finnish information society is also examined with interesting examples of local development projects and regional information society strategies. In the main argument of the book, however, Castells and Himanen claim that the core and peculiarity of the Finnish model is the incorporation of the welfare society and the information society. The Finnish model is compared with Silicon Valley and Singapore – and Finland is clearly distinguished with the welfare dimension. Finland is labelled an "open, welfare information society", whereas Silicon Valley is a "market-driven, open information society" and Singapore is described as an "authoritarian information society" (10). These differences are very obvious and a comparison with another European society, for instance, with more similarities with Finland would have highlighted more delicate differences and characteristics of the Finnish model.

Moreover, the argument of the integration of welfare society and information society in Finland would have required a deeper analytical investigation and a consideration of some of the most recent research literature that emphasizes the consequences of cutting down of welfare services in Finland during the 1990s. Moreover, Castells and Himanen do not take into account the ideological transition towards neo-liberal thinking that took place in Finland in late 1980s

and early 1990s. Also their view of the importance of social goals in the national information society strategies seems to be somewhat exaggerated. Certainly, the recent strategies emphasize social issues, but they still include an overriding stress on developing a competitive and high technology -based information society. In addition, while the development of a "humane information society" has recently become one of the key slogans in the strategies, such notions do not have great importance if they are not well defined, as is the case in these documents.

In the development of the Finnish information society, Castells and Himanen emphasize the importance of national identity: on one hand, national identity is a driving force of the information society and on the other, the development of information society builds national identity. The reason for this, as Castells and Himanen argue, is that the information society has become the new national survival project in Finland, a country with a "history of survival". While stating this they also implicitly admit that information society has replaced welfare society – at least as a source of national identity – which collides with their conclusion of the integration of welfare society and information society.

The book is mainly praise for the Finnish model of information society. The last chapter, however, examines some challenges that are facing Finland in the near future. The authors bring forth such important themes as the divide between the old and the new economy and the lack of entrepreneurialism, the vulnerability of the Finnish economy to the volatility of the global economy, the contradiction

between informational goals and industrial-age structure of government and the rise of new forms of inequality such as regional inequality. Although Castells' and Himanen's description of the Finnish information society and their conclusions do not contain anything strikingly new, they provide a good starting point

for more in-depth analysis in the future.

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