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# *Politics of Knowledge*

## An introduction

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Over recent decades it has become commonplace to refer to contemporary advanced societies as ‘knowledge societies’. This indicates the degree to which different forms of knowledge production, like science and technology, and distribution, like information and communication technologies, are now fundamental processes in the fabric of advanced societies. Be it in the form of communication devices, transport systems, domestic technologies, energy infrastructures, medical or economic expertise, our contemporary way of life has become dependent, more than at any previous time, on a wide variety of technical and scientific knowledge. Simultaneously, the unabated innovation and diffusion of digital communication and information has increased to an unprecedented extent the potential for the production and distribution of knowledge. The rapid expansion of these technologies – together with their instantaneity and transnational nature – has resulted in what arguably constitutes the first truly global networks and flows of knowledge and information. Moreover, as economic competitiveness and productivity have become increasingly dependent on research and innovation, knowledge production and distribution, more than labour and property, have become the central processes in the generation of value in contemporary capitalist economies. In this rapidly evolving knowledge-intensive context, the social sciences have produced a thriving body of scholarly work dealing with different aspects of contemporary knowledge production and distribution. One focus of this literature has been on the new modes of techno-scientific knowledge production (Gibbons *et al.* 1994) as well as the different ‘epistemic cultures’ (Knorr-Cetina 1999), material cultures (Galison 1997), practices (Latour 1987; Pickering 1995) and forms of legitimacy (Daston and Galison 2007), which lie behind them. Another focus of this literature has been on the relations between knowledge and the economy; in particular, the transformative effect of knowledge in the working logic of Western economies and financial markets, and the rise of the so-called knowledge-intensive economies (Thurow 2000; Adler 2001; Chichilnisky and Gorbachev 2004; Powell and Snellman 2004). Although the relations between knowledge, science and economy have benefited from this growing

current of scholarly interest, much less attention has been paid to the new and intricate relationships that are developing in this context between knowledge and politics. How do these new dynamics of knowledge production and distribution affect established political categories and boundaries? Which political vocabularies and institutions are required to govern these novel forms of knowledge production and distribution? And, crucially: what are the political opportunities and risks emerging from these processes? These questions constitute the central focus of this book.

This volume brings together the work of a number of scholars who, in a variety of ways, try to reconceptualise the relationship between politics and knowledge. The title of this book, *Politics of Knowledge*, captures what they have in common: the recognition that knowledge is constitutive of the world and therefore political. In this respect, the authors argue against a widespread and influential notion of the relationship between knowledge and politics which, for the sake of brevity, will be referred to henceforth as the ‘liberal view’. The central tenet of this liberal view is that knowledge and politics are, and must be kept as, separate activities (Merton 1979; Weber 2004; see also Jasanoff, Chapter 1, this volume). Thus, while politics should concern itself with the sphere of values – with how the world *ought* to be – knowledge should be exclusively concerned with the sphere of facts – with how the world *is*. Knowledge, it follows, should be regarded as a mirror that passively registers, without interfering, the essential features and causal relations already existing in the world. To put it differently, knowledge is, and ought to be, value-free, objective and, therefore apolitical. Any knowledge interfered with or tinged by politics ceases to be knowledge, and becomes mere ideology – a value-ridden representation of the world. Politics, on the other hand, should place an equal emphasis on curtailing the spectre of technocracy that constantly threatens to reduce free political debate to the tyrannical rule of experts. The only legitimate interaction between knowledge and politics is, according to this liberal view, that by which knowledge provides the means for achieving effectively and efficiently the goals democratically set in the political sphere. Although neither knowledge nor politics might, in practice, fulfil the lofty ambitions postulated by this liberal understanding, the ideal of this separation has been long held up as the yardstick or normative ideal by which both activities should be practised and judged. That is, even if the proponents of this liberal view accept that it is impossible to disentangle knowledge production from the political context in which it takes place, they nonetheless postulate that knowledge production should *strive* to be as free as conceivably possible from any political interference that could taint the ideals of objectivity and universality. Likewise, even if in practice political debate is always exposed to different forms of expert knowledge and vested interests, political debate should endeavour to attain an ‘ideal speech situation’ in which moral and political concerns can be freely advanced and defended by rational means alone (Habermas 1992).

1 It could be argued that this liberal ideal of an orderly division of labour  
2 between knowledge and politics provided a reasonable and productive  
3 normative framework for much of the twentieth century. Our argument in  
4 this book is that the transformations in the regimes of knowledge produc-  
5 tion and distribution taking place over recent decades have rendered this  
6 view increasingly unproductive for understanding the new relations  
7 between knowledge and politics, and indeed for providing a normative  
8 yardstick to judge both activities. In contrast to the subservient role envis-  
9 aged for knowledge in this liberal view, knowledge has today become a  
0 source of questions that need to be politically answered, rather than just a  
1 means to answer political questions. Examples abound. Recent develop-  
2 ments in neurosciences, reproductive technologies, human enhancement  
3 technologies and genetic engineering have rendered uncertain and open  
4 to debate some of the previously incontrovertible biological foundations  
5 on which modern juridico-political categories have been built (Haraway  
6 1997; Rose 2006; Franklin 2007). The traditional identification of political  
7 subjects with the biological body, for instance, is challenged by the emer-  
8 gence of technologically enhanced bodies which inhabit transitional zones  
9 in which their political status, as well as the nature and extent of their civil  
0 and political rights, remains uncertain. Similarly, the emergence of geneti-  
1 cally modified organisms calls into question the traditional separation  
2 between nature, technology and culture, as well as a host of categories,  
3 like property or indeed the very definition of life itself, which were erected  
4 upon them. The development of new communication and information  
5 technologies, on the other hand, defies conventional hierarchies of exper-  
6 tise as well as the institutions through which knowledge has been custom-  
7 arily produced, circulated and legitimated (Latham and Sassen 2005). By  
8 enabling the creation of communities and bodies of knowledge that exist  
9 beyond the boundaries and control of hierarchical institutions, these tech-  
0 nologies open the door to forms of political association and action which  
1 unsettle the traditional identification of the political with the formal struc-  
2 tures of the state apparatus. In addition to these developments, the large-  
3 scale incorporation of knowledge into the market has resulted in  
4 knowledge-intensive economies which have subjugated knowledge produc-  
5 tion to market demands and agendas. As a result of this, a novel pragmat-  
6 ics of knowledge has emerged in which truth value has been gradually  
7 replaced by productivity and exchange value. This growing commodifica-  
8 tion of knowledge has radically transformed the old institutional appar-  
9 atus of knowledge production, with universities and different research  
0 enterprises increasingly concerned with catering for markets by producing  
1 ‘useable’ and ‘valuable’ knowledge (Strathern 2000).

2 These different, albeit parallel developments point in a direction that is  
3 in open contrast with that optimistic Enlightenment ideal which saw know-  
4 ledge as a civilising force aimed at the betterment of human societies. Far  
5 from the idea of knowledge as a cumulative process that gradually

advanced by dispelling previous areas of ignorance, contemporary knowledge has emerged, instead, as a Janus-faced phenomenon in which every piece of new knowledge is invariably accompanied by uncertainties and risks which have to be politically governed and managed. This Janus-faced nature is evident, for example, in the burgeoning areas of genetic engineering and novel reproductive technologies. Although these technoscientific knowledges have opened up a promising prospect of curing genetic and chronic diseases, they have also produced an equally impressive number of daunting ethical and political debates that remain unresolved. It is still unclear what are the limits to human intervention and manipulation of life or how such limits could be implemented. Similarly, despite intensive investigation there is as yet no definitive answer about the long-term health and environmental effects of spreading genetically modified foods. Developments like man-made climate change, the recent crash of knowledge-intensive financial markets, or recurrent food and health pandemics, painfully reveal the extent to which knowledge and its applications can produce unanticipated, even disastrous effects. If anything has been learned over the recent decades of intensive knowledge production it is that this penumbra of uncertainties and risks is not due to temporal deficiencies in knowledge – which will be eventually washed away by further discovery – but is, in fact, a constitutive part of contemporary knowledge societies. It is this that makes it possible to speak of ‘the paradox of knowledge’ in contemporary knowledge societies. Far from the opposition between knowledge and ignorance envisaged by Enlightenment thinkers, knowledge-intensive societies face the paradoxical, and seemingly endless multiplication of knowledge-manufactured uncertainties. It is this co-production of knowledge and non-knowledge, we argue, that constitutes one of the key defining features of contemporary societies.

In this context, it is not surprising to observe that discussions about knowledge have gradually shifted away from old epistemological debates about knowledge’s ‘representational capacity’ which dominated much of the twentieth century. Indeed, the old tugs-of-war between the ‘positivist’ defenders of universal and objective knowledge and different varieties of ‘relativist’ have been slowly replaced by a growing concern about the ontological dimensions of knowledge; that is, about its *generative capacity* to produce new entities and relations in the world. In other words, in the age of bio-technology, new communication technologies and information economies, the key challenge is no longer to determine the ‘truth conditions’ of these knowledges, or whether they actually provide an objective and pure representation of reality. The most urgent task, instead, is to discuss the possibilities, risks and effects of the new realities generated by these novel forms of knowledge production and distribution, and also the political and legal settings required to accommodate and govern these realities. In a nutshell, the key question at the dawn of the twenty-first

1 century is the politics of knowledge. This volume is a first attempt to  
2 address the contemporary politics of knowledge.

3 Although this book approaches the politics of knowledge in different  
4 ways, it is possible to distinguish four distinct sub-themes. The first of these  
5 sub-themes explores the institutional frameworks and vocabularies  
6 required to govern the paradoxical co-production of knowledge and non-  
7 knowledge which characterises contemporary societies. Here the key ques-  
8 tions are: how can we think anew about the relationship between  
9 knowledge and politics, and about that between non-knowledge and pol-  
0 itics? Two chapters in this volume – Chapter 2 by Ulrich Beck and Peter  
1 Wehling, and Chapter 1 by Sheila Jasanoff – tackle these questions. Jasa-  
2 noff's chapter urges us to rethink the relationship of knowledge and pol-  
3 itics beyond the strict separation between these two realms postulated by  
4 what we have called the 'liberal view'. In order to do so, Jasanoff redefines  
5 scientific knowledge and technological applications as 'agents of political  
6 production' with repercussions for how we imagine and implement demo-  
7 cracy. Science, she contends, is political 'all the way down'. Jasanoff's  
8 project to 'repoliticise' science requires a novel understanding of the ways  
9 in which the public can participate in the governance of scientific know-  
0 ledge. Distancing herself from the 'public understanding of science'  
1 (PUS) model that has been the hegemonic framework to understand  
2 public engagement in the governance of science, Jasanoff offers us an  
3 innovative model based on 'knowledge rights'. According to Jasanoff dif-  
4 ferent forms of knowledge rights, like the right to know, to give informed  
5 consent or to demand reasons, have in fact been deployed over recent  
6 decades in the form of new legislation and regulation, such as freedom of  
7 information laws, consumer protection laws or rules of administrative pro-  
8 cedure. In contrast to the PUS model which tended to disempower citi-  
9 zens by portraying them as a mass of 'ignorant children', Jasanoff argues  
0 that the 'knowledge rights' encoded in these laws constitute a tool to  
1 empower willing citizens to participate in the governance of science and,  
2 more widely, a necessary step towards building democracies of reason.

3 If Jasanoff's chapter offers as a way of rethinking the governance of  
4 knowledge, Beck and Wehling's contribution draws our attention to the  
5 other side of the paradox; that is, the governance of non-knowledge. Their  
6 specific focus here is on what they call the 'politicisation of non-knowing'.  
7 As they contend, 'non-knowledge' is rapidly becoming a site of political  
8 struggle in which two interpretative modes clash. Whereas some people  
9 insist, following the Enlightenment tradition, that non-knowing is only a  
0 temporary problem and that causal networks will eventually be established,  
1 others argue that we should acknowledge the constitutive nature of non-  
2 knowledge and therefore build this non-knowing into the way we approach  
3 the world. Drawing evidence from the recent global financial crisis,  
4 debates about climate change, genetically modified food and predictive  
5 genetic testing, the authors show the increasing pervasiveness of

non-knowledge in contemporary knowledge practice and the need to develop new forms of decision-making that go beyond the modernist assumption that non-knowing is always merely temporal. Non-knowledge, Beck and Wehling argue, is here to stay; hence the urgent need to incorporate it as an integral part of our political vocabularies.

Continuing with the exploration of the uncertainties and possibilities emerging from the dynamics of contemporary knowledge, the second sub-theme of the book focuses on how these dynamics are giving rise to forms of subjectivity and objectivity which call into question some long-standing political and legal categories. Fernando D. Rubio and Javier Lezaun's contribution (Chapter 3) is an example of how new technologies create forms of personhood that unsettle biological demarcations that have hitherto been used to define political categories like 'citizenship' or the 'political subject'. Starting from two case studies of Locked-in-Syndrome (LIS) patients, Rubio and Lezaun suggest that new forms of knowledge and technological enhancement applied to these patients are giving rise to 'distributed forms of personhood' in which various capacities associated with personhood (such as agency or speech) are delegated on to and brought about by a combination of biological, technical and social elements. The authors analyse the difficulties of legal knowledge in recognising these emerging distributed forms of personhood as full-fledged political subjects and the collective effort required to produce and sustain the conditions of intelligibility that LIS patients need to become known as full-blown citizens. Through this analysis the authors seek to advance a novel socio-material perspective on citizenship that regards citizenship as a fragile 'position' embedded in socio-technical systems of knowledge and care, rather than as an abstract 'condition' grounded in an isolated, self-governing body.

In a similar vein, Leach (Chapter 4) also focuses on different legal categories, like cultural and intellectual property, to trace the emergence of alternatives to dominant understandings of knowledge. The rise of knowledge economies and their array of commodification and auditing practices has resulted, according to Leach, in the reification of knowledge as a discrete and tradable 'object'. It is this focus on discrete objects, rather than on social relations, that has led notions of cultural and intellectual property to neglect modes of knowledge and value production that escape the logic of quantification and commodification. Drawing data from ethnographic studies with artists in Indonesia and Melanesia and a collaborative research enterprise between scientists and artists in the UK, Leach demonstrates the possibility of a mode of knowledge production in which value does not derive from the capacity of knowledge to be transacted as an object in the market, but from its capacity to generate specific 'effects' on social relations and persons. This focus on effects, rather than on objects, Leach argues, opens a door to escape the dominant "false scale of accounting in which comparative judgements about value are made to the detriment of recognising wider diverse, social benefits".

1 The third sub-theme in this volume explores how information technol-  
2 ogies, partly because of the extent to which they create new forms of know-  
3 ledge distribution, potentially undermine established political structures  
4 and create new possibilities for political action. Saskia Sassen (Chapter 5)  
5 discusses how the new interactive information and communication tech-  
6 nologies can give rise to new types of economic structures and ‘informal  
7 politics’. Sassen analyses different contexts in which the new technologies  
8 can be and are being used; these contexts range from contemporary  
9 global financial markets to the Zapatistas’ intensive political struggles.  
0 These examples, both in the economic and the political realm, show new,  
1 complex ways in which the local and the global interact. In her discussion  
2 of political phenomena, Sassen shows that the new technologies do not  
3 necessarily guarantee democratic processes, just as it would be wrong to  
4 say that they *ipso facto* impede democratic potential. Rather, Sassen’s dis-  
5 cussion indicates that the new computer-based networks and the increas-  
6 ing digitisation of knowledge, if directed and implemented properly, have  
7 the capacity to establish new political forms of mobilisation, some of which  
8 indeed constitute an expansion of non-hierarchical political processes.

9 Bryan Turner (Chapter 6) complements Sassen’s contribution by high-  
0 lighting the role of the new information technologies in eroding tradi-  
1 tional hierarchies. Specifically, Turner explores the effect of increasing  
2 literacy levels, democratisation of knowledge and widespread access to new  
3 technologies on religious knowledge and authority. Drawing on a wide  
4 variety of empirical sources, Turner argues convincingly that, in different  
5 parts of the world, the ‘age of revelation’ has been substituted for the ‘age  
6 of information’. Whereas the former takes essential truth to be arcane and  
7 essentially hidden, the latter sees truth as basically accessible to all. This,  
8 according to Turner, is what secularisation is really about: the blurring of  
9 the distinction between the elite and the masses eventually undermines  
0 ‘hierarchically organised wisdom’ and the control over (or even the very  
1 notion of) the ‘ineffable’. In contemporary knowledge-based societies, the  
2 hitherto ineffable divine messages transmitted by theologians or priests  
3 are disseminated by modern “intermediaries (talk-show hosts, opinion  
4 leaders, journalists, TV personalities and the like) who make the ineffable  
5 effable”. As Turner argues, the transformation enacted by these new  
6 systems of knowledge production and distribution explains to a great  
7 extent the survival, if not buoyancy, of religion in contemporary Western  
8 as a form of “spirituality which is a post-institutional, hybrid and individu-  
9 alistic religiosity”.

0 We did not want to conclude our exploration of the contemporary  
1 politics of knowledge without investigating the politics of the types of  
2 knowledge produced by those who investigate and participate in the social  
3 world. This is the topic of the fourth sub-theme, which explores the  
4 positions and tools that social scientists may employ to deal with this  
5 complex and evolving relation between knowledge and politics. Fernando

García Selgas (Chapter 7) tackles this issue head-on by proposing a paradigm of social fluidity. For almost three decades now, Selgas argues, social theorists have tried to study social life in terms of fluidity, whether this is expressed as ‘liquidity’, ‘fragmentation’, ‘mobility’ or ‘relationality’. This new paradigm of fluidity brings together some otherwise very different orientations, ranging from Baudrillard’s reflections on media-driven society and Zygmunt Bauman’s observations about liquid modernity to Bruno Latour’s attempts to bypass the rigid opposition between nature and culture. Selgas argues that these new theoretical developments towards recognising fluidity undermine previously stable conceptual entities like the state or the political subject and open the door to a new kind of ‘fluid politics’ which enacts alternative forms of political discourses and practices. Rather than politics based on discrete and fixed entities (like the state or the subject), this model of fluid politics points in the direction of a vocabulary rooted in changing, heterogeneous entities “more interconnected and implicated with the environment and other voices”.

John Law’s work (Chapter 8) falls squarely within this paradigm of fluidity. In his contribution, Law focuses on the performative effects that our methods have on the realities we study. He introduces the notion of ‘collateral realities’ to refer to those realities that are accomplished, mainly unintentionally, as we frame and study reality. By developing this approach, Law opposes what he sees as ‘Euro-American common-sense realism’ which assumes that there is a coherent, single reality that exists independently of people’s action. Countering this view, Law claims that realities are ‘done’ and ‘accomplished’ through a variety of practices that involve different sets of ‘material-semiotic relations’. Law spells out this view through a particular example: a stakeholders’ meeting of a programme called Welfare Quality on farm animal welfare. By focusing on the specific methods and technologies employed in this meeting to produce knowledge claims about animal welfare, Law shows how methods and knowledge perform, along the way, specific understandings of the citizen, the consumer and the state as ‘collateral realities’. Yet, as Law warns, this view of reality as being done by different sets of practices does not amount to saying that ‘anything goes’. Rather, he claims: “it is to shift our understanding of the *sources* of the relative immutability and obduracy of the world: to move these from ‘reality itself’ into the choreographies of practice.” It is in this sense, Law argues, that it is possible to define knowledge practices as a form of ontological politics; that is, a way of enacting specific realities as well as a host of unintended, but equally crucial collateral realities.

Still within this fourth sub-theme, Patrick Baert and Alan Shipman (Chapter 9) discuss the phenomenon of public intellectuals and argue against the view that their status and number are in decline. Against this ‘declinist’ thesis, Baert and Shipman assert that new types of public engagement have emerged which also result in novel forms of political

1 engagement. Commentators who advocate the declinist thesis tend to take  
 2 too restrictive a notion of what it is to be an intellectual, and fail to recog-  
 3 nise the new forms of, and new participants in the intellectual sphere. The  
 4 prototypical cases were authoritative intellectuals: generalists with a con-  
 5 siderable amount of cultural capital and a certain aura, often taking a  
 6 moral stance. Authoritative intellectuals have gradually been replaced by  
 7 professional intellectuals, and then by what are termed embedded intel-  
 8 lectuals. In contrast with authoritative intellectuals, professional intellectu-  
 9 als are steeped in a particular discipline and derive their authority from  
 0 that expertise. However, like authoritative intellectuals, professional intel-  
 1 lectuals speak from above, whereas embedded intellectuals have a more  
 2 democratic relationship with their audience, often developing a dialogue  
 3 with a wider public and relying on it to boost their credibility and survival.

4 Although the four sub-themes do not represent an exhaustive list, they  
 5 are likely to play a central role in research into the politics of knowledge  
 6 for the foreseeable future. As such, the study of the politics of knowledge,  
 7 anchored as it is in those four sub-themes, has major repercussions for  
 8 various disciplines other than sociology and political science while also  
 9 drawing on those other disciplines to reshape sociological and political  
 0 concepts. For instance, while Turner's chapter shows the significance of  
 1 new technologies for the study of religion, Leach's contribution exempli-  
 2 fies the importance of these issues for scientists and artists, and across dif-  
 3 ferent societies; and Rubio and Lezaun's arguments about the subject and  
 4 personhood explore emerging issues in legal theory. These examples dem-  
 5 onstrate how the study of the politics of knowledge invites a truly cross-  
 6 disciplinary approach that not only opens up dialogue between  
 7 neighbouring disciplines in the social sciences but possibly calls into ques-  
 8 tion the neat divisions between them. Furthermore, several contributions,  
 9 including Sassen, García Selgas, Law, and Rubio and Lezaun, emphasise  
 0 the contemporary importance of hybrid entities that shatter the separa-  
 1 tion between the social and the technological. This volume is, therefore,  
 2 an invitation to rethink disciplinary as well as ontological boundaries.

3 The issues raised in this volume are topical and will lastingly shape the  
 4 nature of politics and society. But it would be misleading to take academ-  
 5 ics, like those contributing to this book, as having a monopoly over the  
 6 type of knowledge that the book identifies and assesses. There are many  
 7 others who reflect on the politics of knowledge, especially in an age where,  
 8 as Baert and Shipman point out, sections of the highly educated public  
 9 have plenty of resources and time at hand to develop sophisticated analy-  
 0 ses and criticisms. Journalists, politicians, scientists, policy makers, artists  
 1 and activists regularly analyse a substantial number of the topics discussed  
 2 here. In an era of reflexive politics, considerations similar to those we find  
 3 in this book feed back into the political sphere and will eventually change  
 4 the future political direction. The chapters by Jasanoff and Beck and  
 5 Wehling give some indication of the extent to which reflections on the

politics of knowledge are already woven into the fabric of society today, but more of those feedback loops are to come, making the future of the politics of knowledge both exciting and unpredictable.

## Bibliography

- Adler, Paul S. 2001. Market, Hierarchy, and Trust: The Knowledge Economy and the Future of Capitalism. *Organization Science* 12, no. 2: 215–234.
- Chichilnisky, Graciela and Olga Gorbachev. 2004. Volatility in the Knowledge Economy. *Economic Theory* 24, no. 3: 531–547.
- Daston, Lorraine and Peter Galison. 2007. *Objectivity*, 1st edn. New York: Zone Books.
- Franklin, Sarah. 2007. *Dolly Mixtures: The Remaking of Genealogy*. Princeton, NJ: Duke University Press Books.
- Galison, Peter Louis. 1997. *Image and Logic: A Material Culture of Microphysics*. Chicago, IL: University of Chicago Press.
- Gibbons, M., Camille, L., Schwartzman, S., Nowotny, H., Trow, M. and Scott, P. 2004. *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. Sage: London.
- Habermas, Jurgen. 1992. *Moral Consciousness and Communicative Action*. Boston, MA: MIT Press, October 8.
- Haraway, Donna J. 1997. *Modest\_Witness@Second\_Millennium.FemaleMan\_Meets\_OncoMouse: Feminism and Technoscience*. London: Routledge, 15 January.
- Knorr-Cetina, K. 1999. *Epistemic Cultures: How Sciences Make Knowledge*. Cambridge, MA: Harvard University Press.
- Latham, Robert, and Saskia Sassen. 2005. *Digital Formations: IT and New Architectures in the Global Realm*. Princeton, NJ: Princeton University Press.
- Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers through Society*. Boston, MA: Harvard University Press.
- Merton, Robert K. 1979. *The Sociology of Science: Theoretical and Empirical Investigations*. Chicago, IL: University of Chicago Press.
- Pickering, Andrew. 1995. *The Mangle of Practice: Time, Agency, and Science*. Chicago, IL: University of Chicago Press, 15 August.
- Powell, Walter W. and Kaisa Snellman. 2004. The Knowledge Economy. *Annual Review of Sociology* 30, no. 1: 199–220. doi:10.1146/annurev.soc.29.010202.100037.
- Rose, Nikolas. 2006. *The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century*, annotated edn. Princeton, NJ: Princeton University Press.
- Strathern, Marilyn. 2000. *Audit Cultures: Anthropological Studies in Accountability, Ethics and the Academy*. London: Routledge, 8 September.
- Thurrow, Lester C. 2000. Globalization: The Product of a Knowledge-Based Economy. *Annals of the American Academy of Political and Social Science* 570: 19–31.
- Weber, Max. 2004. *The Vocation Lectures: Science as a Vocation, Politics as a Vocation*. London: Hackett.