

## Beyond the Information Revolution?

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Throughout its 27 years *Prometheus* has been concerned with 'issues in technological change, innovation, information economics, communications and science policy'. While this seemed a modern focus, many contributors to the literature tended to overlook history and focused too sharply on what was happening here and now with the exciting new information technology. In reality, the Information Revolution had been a very much longer ongoing process. Useful as it seemed, the distinction between short-run and long-run severely hampered understanding of the evolutionary processes of change and tended to exclude the historian from economic inquiry.

There were, of course, notable exceptions. Alfred Marshall, for example, recognized that

Ideas, whether those of art and science, or those embodied in practical appliances, are the most 'real' of the gifts that each generation receives from its predecessors. The world's material wealth would quickly be replaced if it were destroyed, but the ideas by which it was made retained. If however the ideas were lost, but not the material wealth, then that would dwindle and the world would go back to poverty.<sup>1</sup>

In general, however,

The reaction of economic theorists was most extraordinary. Instead of opening their eyes to reality and acknowledging, at last, the relevance of technical progress, they locked themselves into a theoretical castle ... and concentrated all attention on the typically static problems of the optimum allocation of existing resources.<sup>2</sup>

The aim of this issue of *Prometheus* is to look beyond the Information Revolution as it has mostly been conceived and to envisage an all-encompassing process of change that has transformed and continues to transform work, industry, trade and government with increasingly apparent consequences. Above all, the

narrowly conceived modeling needs to be replaced by notions of complex, evolutionary processes and explicit attention given to time. This last is a demanding task.<sup>3</sup> A recent book deals with one such innovation: Carl Linnaeus' *Systema Naturae* and his binomial system which made possible universal communication about nature during the last 250 years and which seems to have a long life still ahead.<sup>4</sup>

The invited contributors were asked to respond to the question: *Beyond the Information Revolution?* Each accepted the task and followed their own inclinations. To facilitate reading, versions of the abstracts are given here.

#### **Ian F. McNeely, 'Current Trends in Knowledge Production: An Historical-Institutional Analysis'**

This article assesses the impact of current trends in information technology, higher education, science, and the environment on knowledge production. Its macro-institutional approach diverges from conventional histories of ideas, media, and technologies but also from the understandings of knowledge and information prevalent among economists. It instead identifies patterns by which entirely new institutions of knowledge supersede their predecessors, reconceptualizing today's changes around the fitful process by which the laboratory, broadly understood, outgrows the tutelage of the academic disciplines.

#### **Nick von Tunzelmann, 'Reinventing Knowledge Systems: With an Application to Recent Systematic Changes in East and South Asia'**

The paper is built around a critique of the recent book by McNeely and Wolverton, entitled *Reinventing Knowledge*. The paper first contests the concepts of 'knowledge' and 'institutions', before arguing that the 'systems' within which knowledge is embedded are in reality growing more and more complex. The huge scale and scope of the present-day Internet in our view invalidate their rather one-dimensional view of knowledge accumulation and their downplayed interpretation of the impact of the Internet. Our historical studies indicate that the Internet 'revolution' lies at the core of the 'Third Industrial Revolution' the advanced industrial nations are currently experiencing, which seems likely to transform the worlds that such nations are facing, not just in certain technologies or products, but in broader domains of the organization of production and innovation, their management and governance. The final section of the paper assesses the recent 'growth dynamics' in Eastern and Southern Asia and finds mostly confirmation of the points already made, in societies that eagerly await them.

#### **Gunnar Eliasson, 'Knowledge Directed Economic Selection and Growth'**

The single most important postulate in economics is what you assume about the totality of all possible states that the economy can be in. The mainstream model is very narrow and excludes all interesting dynamics. If we widen the scope to include the investment opportunities that exist in the unpredictable world of an experimentally organized economy that is more compatible with economic reality, new answers to old questions emerge. This is done through simulation on the Swedish micro to macro model and with one Swedish business case.

**Peter E. Earl, 'Information Technology and the Economics of Storing, Spreading and Generating Knowledge'**

This paper examines the future for the growth and transmission of knowledge with a particular focus on the collision between the zero-marginal-cost-economics of online publishing and the finite attention spans of those who download content. While it is likely that the Information Revolution will produce much greater equality of access to knowledge, its impact on the efficiency with which people pick up capabilities or generate new knowledge remains debatable.

**Hans-Jürgen Engelbrecht, 'Pathological Knowledge-Based Economies: Towards a Knowledge-Based Economy Perspective on the Current Crisis'**

The Wall Street 2007 crisis that turned into a global financial and economic crisis is also a crisis of knowledge-based economies. This paper argues the need for a specific knowledge-based economy perspective on the crisis that takes human nature seriously, i.e. incorporates psychological factors like Keynes' 'animal spirits'. This is a prerequisite for designing institutions that might mitigate severe pathologies of KBEs in the future and suggests the need for a new kind of welfare economics.

**Notes and References**

1. Alfred Marshall, *Principles of Economics*, 8th edition, Macmillan, 1925, p. 780.
2. Luigi Pasinetti, 'Technical progress and structural change', *Economic Papers*, 12, 3, 1993, p. 3. See also D. M. Lambertson (ed.), *Economics of Information and Knowledge*, Penguin Books, 1971; D. M. Lambertson (ed.), 'The Information Revolution', *The Annals of the American Academy of Political and Social Science*, 412, March 1974; and Joel Mokyr, *The Gifts of Athena. Historical Origins of the Knowledge Economy*, Princeton University Press, 2002.
3. See, for example, Chris Freeman and Francisco Louca, *As Time Goes By: From the Industrial Revolution to the Information Revolution*, Oxford University Press, 2002.
4. Sandra Knapp and Quentin Wheeler (eds), *Letters to Linnaeus*, Linnean Society of London, 2009.