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Helga Nowotny, *Curiosità insaziabile. L'innovazione in un futuro fragile*. Torino: Codice edizioni, 2006, pp. 136. Ed. or. *Unersättliche Neugier. Innovation in einer fragilen Zukunft*. Berlin: Kulturverlag Kadmos, 2005

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## Book reviews

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Science and technology, with their unceasing production of novelties, have not only modified our everyday life, but also our concept of the future. If it is true that in the African sign language the gesture that stands for the future points backward – because the future is what we could not see, – it is also true that every human community has resorted to cosmologies and techniques in order to foresee the future, for the sake of controlling it and maintaining the obtained stability. Nevertheless, while myths and cosmologies provided an image of the only possible world – in which every unexpected event could be interpreted and integrated in the overarching worldview – science and technology instead create a *fragile* future, populated by uncertainties and open to a wide multiplicity of possible scenarios. This is the starting point for Helga Nowotny's reflection on the relation between future and innovation – or rather between science, technology and society. In this short book Nowotny joins several chapters in *Science and Technology Studies* to outline a framework with which she analyzes what in a previous work (*Re-Thinking Science*, written with Peter Scott and Michael Gibbons) was termed the “co-evolution of society and science.”

According to Nowotny, our conception of the future is deeply modified in consequence of a considerable production of novelties. The new, indeed, breaches the boundary between present and future, by opening the horizon and changing the future in an “extended present.” Our knowledge and technical capabilities are addressed to a future, which is not intended as a new beginning, but rather as a dynamic extension of the present. Such kind of future is fragile, according to Nowotny, because it generates a wide space of possibilities, but it needs to be defined and it did not provide categories to guide human action. The uncertainties arise from an oversupply of knowledge, from which too many alternatives and possible consequences derive that are difficult to evaluate. Innovation is the institutionalized activity, which, driven by the insatiable human curiosity, unceasingly produces the new. In contemporary Western societies the production of the new is committed to science and technology, which place a wide multiplicity of means in the hands of human curiosity. Such a pace in producing the new within science and technology, however, has triggered fears and a sense of losing control over our life and, especially, our identity. Nowotny reminds us that science is blurring the boundaries between nature and society, by producing what Bruno Latour calls hybrids, i.e. entities belonging to an artificially made nature (e.g. objects produced by the so-called synthetic biology). By citing the social studies of scientific imaging and visualisation, Nowotny also reminds us that science has modified our perception of reality, making visible the infinitely small as well as what is spatially and temporally far from us. A new myth of origin is rising: no more the “simple” act of creation or the continuous repetition of processes, but rather the new comes from the unexpected outcomes of scientific-technological ordinary

practices. As Nowotny points out: “This scientific-technological myth of origin posits that the new beginning is constantly repeated and yet is different each time. The origin is the process of innovation itself, a process that has prerequisites but that, thanks to scientific-technological curiosity, continues to create out of itself” [p. 11].

Since science and technology deeply affect our societies – not only by providing new objects and practices, but also by modifying our perception of reality – we are faced with ambivalence underlying the tension between the need of innovation and the fear of losing control. Indeed, innovation is one of the main providers of means with which an economy can compete in the global marketplace, but it also generates uncertainties. The strong point of this book is that Nowotny does not limit her analysis to a mere theoretical reflection, but she develops an institutional analysis of the intertwining of science and society. In this way she goes beyond the strictly local and contingent analysis of several STS scholars, moving towards a more general social theory of innovation. Her previous studies of the new modes of knowledge production give her the analytical tools with which she can examine the institutional dimension of scientific activity and its *contextualisation* in society at large (a concept developed in *Re-Thinking Science*).

Citing the political scientist Yaron Ezrahi, Nowotny points out that modern science claimed itself as “an apolitical authority with the capacity to discipline political activity, criticize decisions, and place limits on the secular state. This – political – function of science was sometimes used to depoliticize and veil the exercise of power through the invocation of scientific and technological rationality (...) The authority of science as an apolitical authority is based on a legitimacy derived from the authority of nature” [pp. 28-29]. Indeed, in the modern era, nature was regarded as an immutable limit to human action and as the norm that defines normality. Although invoking an immutable nature “that stands for the immutability of normative claims (...) screens out knowledge of the societal process that lead to knowledge and the capacity to intervene in, manipulate, and control nature” [pp. 27-28], such an image of nature has provided authority to science, and it is nowadays used to justify resistance against the new. According to Nowotny, science is losing its authority and monopoly over the interpretation of reality, since it is exploring fields in which the knowledge of nature clashes with values and ethical principles (e.g. stem cell research and human genetics) and it is unable to provide an undisputed guide for action. A second source of declining authority is found in the loosening of the alliance between science and the state. Indeed, in contemporary societies innovation is increasingly managed by a wide plethora of institutions. In particular, as the market is regarded as the more efficient resource allocation mechanism, scientific research is experimenting a shift towards a growing commercialization and *privatization*. Patents, licenses, and intellectual property rights are the new criteria that discipline the knowledge production in searching competitiveness in the global marketplace. Nowotny also indicates another set of criteria that rules scientific activity. Such a set derives from the demand for public participation in science and technology policy-making. As many STS scholars have pointed out, Western civil societies increasingly call for participation in decisions that regard ourselves, our values and ways of life.

This process of *democratisation* is, according to Nowotny, the ground on which we could erect a new social contract for ruling innovation. Indeed, innovation is also fragile, as, in order to stabilize itself, it has to leave laboratories (the *microstructure of curiosity*,

as she calls them) and enter into a complex web of institutions (markets, enterprises, mass media, governments, pressure groups and so on). Such contextualisation implies a co-evolution of society and science, in which both are constantly constructed in an interactive manner. In order to obtain a socially robust innovation, we need strategic places in which to find social consent over innovations (the author cites the Latourian “Parliaments of things”). Innovation itself is unable to say how to organize society, because it just explores the new and opens possibility. The discourse on future begins to have an important social function, becoming a political space, which several actors try to occupy.

In an apparent paradoxical manner, Nowotny holds that such fragile future can be made manageable exclusively by way of innovation, since only further innovation can solve the problems created by innovation itself. This paradox dissolves if we consider that according to Nowotny a socially robust innovation is one that incorporates also social and cultural innovations through the process of democratizing expertise and the corresponding process of expertizing democracy. Public participation in science and technology becomes the keystone for resolving the tension between the need for innovation and the fear of uncertainties and its adverse consequences. In other words, more than a critique or an apology, this book is a sort of manifesto for a socially robust innovation.

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