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Marina Maestrutti

Imaginaires des nanotechnologies. Mythes et fictions de l'infiniment petit

(*Nanotechnology Imaginaries. Myths and Fictions of the Infinitely Small*)

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An English translation of the title of Marina Maetrutti's book might be "Nanotechnology Imaginaries". The term "imaginary" (imaginaire in the original French) is central to understand the analysis of the "myths and fictions of the infinite small" (the subtitle of the book) that Maestrutti proposes. It allows her to identify pervasive tensions in technological discourses, and it suggests a path for the political analysis of scientific development. I will discuss these two points successively.

Marina Maestrutti bases her analysis on the description of nanotechnology as a field where the future is regularly referred to. An overlying discourse made of "industrial revolutions" is part and parcel of the development of the field, associated with elements coming directly from science–fiction. The book analyzes in details what many nanotechnology scholars have been concerned with in the past few years, namely the futuristic accounts that accompany the development of nanotechnology. Marina Maestrutti describes some of these accounts, including those grounded on self-replicating nano-machines, and the perspectives of radical social transformations based on human enhancement. She discusses them along three lines, examined successively in the three parts of the book: the major narratives that were produced with the development of nanotechnology, the visions of the future of nanotechnology, and the imaginaries of body transformations.
Throughout the book, the underlying philosophical themes of the control over nature, the making of utopia and counter-utopia, and the transformation of the human body are studied in details. The discourses related to nanotechnology then appear as re-activations of long-term issues in philosophical thinking. While analyzing these long-term issues, Marina Maestrutti elegantly describes the roots of argumentation regarding nanotechnology's applications, by pointing to a series of dichotomies that pertain to the constructing of meaning of

(nano)technological development.

Thus, tensions appear between the reference to the wonders of science, and the space it opens for public controversies about its potential negative consequences; between the call for the "new industrial revolution" and the fear of the transformation of society (or even mankind itself), as it is made explicit in the writing of some of the main nanotechnology proponents, such as Erik Drexler. Through the analysis of the two joint sides of progress and apocalypse, of utopia and counter-utopia, Marina Maestrutti convincingly links the discourses of technological development with philosophical and/or mythical traditions, such as the myth of Prometheus, or Descartes's vision of animated machines.

For all its analytical interest, the description of these dichotomies might leave the reader in a bit of a quandary. Marina Maestrutti contends that these pervasive dichotomies "structure our imaginaries and our symbolic representations of present and future" (p.144). Yet ultimately, these tensions in the visions of nanotechnology future development also raise a political issue: do "we", as observers or citizens, need to pick one or the other options? Are we condemned to choose between progress and apocalypse?

Answering these questions might be complicated, particularly in the case of the transhumanists discussed in the third part of the book. While one feels instinctively skeptical about the technological development and the transformation of the human specie as transhumanist thinkers call for, wouldn't we rather be, to paraphrase Donna Haraway, rather cyborgs than god(esse)s? The alternative to transhumanism that the book presents is Leon Kass' perspective of human dignity, based on pre-given values and a taken for granted "human dignity", irrespective of any situated context. Marina Maestrutti made this tension explicit as she explains that the "debate is articulated around the opposition between bioluddites (or bioconservators), who refuse the technological enhancement of humans, and bioprogessists (among whom transhumanists), who argue for the right to become 'more than human'" (p.212, my translation).

In this quote, it seems that the opposition cannot be overcome. Marina Maestrutti offers a path forward though, and I would like to argue that the very notion of imaginaries, provided it is developed as a systematic analytical lens, might allow the analyst to escape the dichotomies, and ultimately point to the political stakes of technological development.

Facing a two-side debate, it could be tempting to start the analysis (or, for that matter, the political discussion) by the examination of what nanotechnology "really is". Why trying to decipher the "good" from the "bad" if we do not know the technical, practical, material reality of nanotechnology? This is a position often adopted by many commenta-

tors of nanotechnology (or scientists wanting to tell "the truth" about nanotechnology). But this would be throwing out the baby with the bath water. For, as Maestrutti convincingly argues, the futuristic visions of nanotechnology are part and parcel of the development of nanotechnology, as a science policy programs expected to re-organize scientific research for the development of new projects. Calling for the examination of what nanotechnology "really" is would risk loosing this crucial component of the making of nanotechnology.

The book, while not systematically exploring the ways in which the above-mentioned dichotomies practically structure the making of nanotechnology objects and programs themselves, does suggest a path forward through the very concept of "imaginary" – as used in its title. The term "imaginary" comes from "image", and there are many connections indeed between Maestrutti's imaginaries and scientific (and non scientific) images, in a way that shifts a problem of representtation to a question of presentation, related to the actual making of the world being described. The book rightly discusses Lorraine Daston and Peter Galison's use of the notion of (re)presentation as a way of constructing an objectivity connecting the description of nature with the making of technical objects (p.58). The images of nanotechnology are the products of such processes, by which scientific instruments perform the material reality they describe.

Nanotechnology images intervene at multiple levels. They are scientific, but also commercial, as they appear on the cover of scientific magazines and on the front page of science policy report. Marina Maestrutti discusses these images as devices enacting the visions she is interested in. This opens an interesting analytical path: the performance that these images do is also part and parcel of the making of nanotechnology as a political program. They connect the "visions", the discourses of "hype", with the concrete making of nanotechnology programs, in science policy offices and in the construction of research projects. They enact the making of nanotechnology as a new entity comprising laboratory practices and technological objects, future developments and articulations between research and industry, the description of materials and the intervention in their very making.

Following this perspective, one can contend that imaginaries are not about the description of a world already there, but as assemblages of instruments performing new realities. Understood as such, imaginaries connect the making of future visions with that of the actual construction of nanotechnology. They enact visions of progress or risks. They organize social identities (e.g. concerned publics, involved citizens, or transhumanists active in science policy arenas) and define forms of political legitimacy about acceptable technological developments (who

should decide, where and about what?). "Imaginaries", in this extended meaning echoing current works in the field of Science and Technology Studies (Jasanoff and Kim, 2010), then appear as powerful analytical tools for the description of technological programs, while also helping us locate the sites where the political issues of nanotechnology are made explicit. In this perspective, imaginaries are less pervasive "structures" defining our perceptions of the past and the future than instrumented assemblages, which practically construct technical objects and social practices. Understanding imaginaries as such relocates the political issues of nanotechnology at the heart of the making of objects and visions. It might offer a path for the practical elaboration of the "partnership" between the artificial and the natural with which Marina Maestrutti concludes her book.

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Herman Galperin and Judith Mariscal (eds.)

Pobreza Digital – Perspectivas de America Latina y el Caribe

2009, CIDE, 213 pp.

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I would like to start this review by situating my viewpoint. Likely, I was asked to read this book because of my long lasting interest to conduct research 'beyond' the digital divide. A decade ago, when I started my PhD research on a telemedicine system in the Peruvian upper amazon, it sounded 'exotic' -to say the least- to my colleagues and supervisors. Indeed, the digital divide problem proved to be "out there" as much as in the tacit empirical assumption that the amazon is not a relevant setting to study telemedicine from an organizational perspective. Subsequent success of that research proved that 'digital divide' is a 'real' problem (still in search for solutions) as much as a reflexive problem for research practice, often too slow in revising own assumptions.

This book addresses the former issue but overlooks the latter, which could be quite relevant for Tecnoscienza readership.

Overall, "Pobreza Digital. Perspectivas de America Latina y el Caribe" [Digital Poverty. Perspectives from Latin America and the Caribbean] focuses on an important issue, both for research and practice.