of the telephone: the author describes, indeed, how subscribers imposed many ways of use that forced changes in telephonic administration. An interesting example is the social practice called "parasitism": for a long time Italian telephones were managed with flat rates and subscribers often borrowed their telephones, sometimes in exchange for money and sometimes for free. This social practice forced major changes in rate's policies.

Balbi's research is very interesting because it shows a telecommunication system, which nowadays is considered as a taken- for-granted infrastructure, in its early phase of diffusion. He in fact highlights some steps in the process of stabilization of the telephone, emphasizing the heterogeneous pushes and pressures that contribute to the co-construction of the medium and demonstrate, with a series of examples, how often "creating an infrastructure is as much social, political, and economic work as it is theoretical" (Bowker, Star, 1999: 109). Moreover, the study here presented underlines a recent rediscovery of the origins of telecommunication systems as a new and promising area of research in media and telecommunication, and it can be an interesting reading also for those who are involved in studies on New Media.

References

Bowker, G.C. Star, S.L. (1999), *Sorting Things Out: Classification and Its Consequences,* The MIT Press, Cambridge (MA).

Latour, B. (1992), *Aramis ou l'amour des techniques,* La Découverte, Paris.

Pinch, T. & Bijker, W. E. (1984), *The social construction of facts and artefacts: Or how the sociology of science and the sociology of technology might benefit each other,* in "Social Studies of Science", 14(3), pp. 419–424.

Richeri, G. (2006), *The media amidst the enterprises, the public and the State.* "Studies in Communication Sciences" 6(2), pp. 131–143.

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Mauro Turrini (ed)

Biocapitale. Vita e corpi nell'era del controllo biologico

(Biocapital. Life and bodies in the age of biological control)

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As Mauro Turrini notices in his introduction to this edited volume, the concept of biocapitalism has been imported only recently in the Italian debate and it has been received in its broadest sense. According to Codeluppi (2008, p. 2), for instance, "the biocapital is the most advanced evolution of the capitalist economic

model: a form characterized by its growing intertwining with human beings' lives". Previously, capitalism was mainly concerned with processing raw materials and machinery, while nowadays the biocapital includes the body of workers in their entirety. Therefore, in this sense, biocapitalism affects all the biological, mental, emotional and relational components of individuals.

The volume, on the contrary, has the merit of bringing to the Italian audience a more sophisticated and articulated discussion on the relation between biotechnology, economics, politics, culture and society. In this area "biocapital" refers to the capacities of certain things (such as organs and tissues) to produce surplus value (Waldby and Mitchell, 2006).

In the last years, several scholars in the field of STS have explored the contemporary join of capitalism and biotechnology. In this literature a variety of terms have been forwarded to name how 'life' has become enmeshed in market dynamics, and no term has become as prominent as biocapital (for a classification see Helmreich, 2008).

With the aim of drawing a map of the studies that have developed a reflection on biocapital, Turrini restricts the area of interest only to clinical applications, and chooses four articles that represent four milestones in the international debate.

The first chapter by Kaushik Sunder Rajan, one of the main international contributors to this debate, deals with the genomic capital. Exploring the relation between biotechnology and market forces, the essay introduces a theoretically sophisticated notion of biocapitalism, which shows how life sciences have come to be significant producers of both economic and epistemic value in the last decades. Following the connections among scientists, entrepreneurs, venture capitalists, and policymakers, the author shows how genomics allows a glimpse into contemporary capitalism – far away from the traditional concepts of land, labor and capital. Examining the practices and goals of research, the financing mechanisms, the relevant government regulations, and the hype and marketing surrounding promising new technologies, Rajan analyses the role and value of information, redefining genomics as a very special kind of information science.

This path leads to an embedded understanding of market logics, which are not taken for granted but emergent from an intertwined network of elements. The contestation of what is a "sound market logic" is over the very definition of what constitutes a market logic: "market logic goes much beyond a quantitative generation of maximal surplus value – it needs to generate other forms of symbolic capital, which in the case of biotechnology already exists in the rhetorical and real construction sector of the industry as being in the business of Food, Health and Hope" (p. 68).

The essay by Robert Mitchell and

Catherine Waldby explores genetics research in a different perspective, looking at the cases of national biobanks. The recent interest in biobanks is often explained through their interpretation as an economic 'resource' for basic researchers and academic biologists as well as pharmaceutical companies, diagnostics companies, and clinical genomics companies. On the contrary, the authors emphasize their economic aspect, focusing specifically on the way in which national biobanks create biovalue. According to the authors, the creation of biovalue through biobanks is possible through the introduction of what they define clinical labor – that is, the regularized, embodied work that members of the national population are expected to perform in their role as biobank participants.

The scientific rationale for the creation of national biobank is the complexity of genetic contribution to common diseases, and of the gene-environment interactions. In order to probe gene-environment interactions, researchers hope that storing such large population-based collections of biosamples from hundreds of thousands of individuals, and relatively long term access to their information, will provide the statistical power necessary to identify the connection between those two components. On the basis of this premise and under a rubric of citizenship and public good, national biobanks enroll a part of national populations as economically productive participants: "subjects who lend their bodies and prospective medical histories to create a research resource with significant commercial potential" (p. 96). According to the authors, the shift from the civil to the economic discourse clarifies the commercial logics that are at the basis of the creation of national biobanks, raising new questions about equity and participation.

In chapter three, Sarah Franklin discusses what she terms "ethical biocapital" as a new form of cultural capital, using the case of Dolly the sheep. Franklin clarifies Dolly cloning from a technical point of view: it was not a clone in the colloquial sense, i.e. a perfect duplicate. Dolly was rather the result of somatic cell nuclear transfer, in which nuclear DNA from one ewe cell was inserted into the denucleated cell of another. This mixture was then cultured into sheep embryos to be placed into still other ewes for gestation.

Even though Dolly has an iconic status – being an emblem of what is currently achievable and what seems to be possible in the future – the relevance of the case lies in the cultural production of what she defines ethical biocapital. This has been generated through the sustained governmental attention to the bioethical issues raised by genetics, cloning, and stem cell research, and the British establishment of detailed regulations of such activities generated through collaborative processes between citizens and experts. Therefore, the ethical biocapital locally produced has allowed the UK to proceed rapidly with its government-supported research agendas in contrast to what

happened in other countries.

The last chapter by Melinda Cooper describes the connection between the reproductive and regenerative medicine. According to the author, currently these two fields of medicine interact through a number of different interfaces. However, they have different expectations from their in vitro cells and clashing interpretations of life generation. Moreover, they do not even share the same institutional, political and economic context. All those differences produce what Cussins-Thompson (1996) has defined "ontological choreography": the same biological material can assume different ontological status according to the sense making process in which it is embedded and can even be subject to different legal regimes (typically, ownership and family law).

In this perspective, Cooper's analysis of regenerative and reproductive medicine is an example of incorporation of ethical and moral models into research programs. As the author notices, in fact, the USA context is characterized by a highly unregulated market in scientific research and private services that often co-exists alongside the strictly restrictive policy of the Federal Government.

In my understanding, what deeply binds these four essays around the concept of biocapital is the local dimension in which state, market and institutions take shape in research practices and clinical work. On the contrary, as the last two chapters show unequivocally, the biocapital theorization is still tied to an Anglo-American perspective.

Hopefully, the publication of these essays in Italian could open the way for a structured discussion of these issues in the national debate, where the meeting between theoretical approach and local practices may produce interesting and fruitful insights. If in general terms this would be appropriate for many different countries, in this case there would be many reasons to study these issues in Italy – where biobanking is still far from being established; the Italian regulations forbid research on national embryos, while allowing scientists to import foreign stem cells lines; and national researchers are internationally recognized as pioneers in the research on the cryopreservation of eggs, developed as a result of the prohibition to freeze embryos

References

Codeluppi, G. (2008) *Biocapitale. Verso lo sfruttamento integrale di corpi, cervelli ed emozioni*, Bollati Boringhieri, Torino.

Cussins, C. (1996) *Ontological choreography. Agency through objectification in infertility clinics,* in "Social Studies of Science" 26(3), pp. 575-610.

Helmreich, S. (2008) *Species of Biocapital,* in "Science as Culture" 17(4), pp. 463–478.

Waldby C., Mitchell R. (2006) *Tissue economies: blood, organs, and cell line in late capitalism,* Duke University Press, Durham.