

Niki Vermeulen, Sakari Tamminen and Andrew Webster (eds.)*Bio-objects: Life in the Twenty-first Century*

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Techno-scientific breakthroughs have generated a process of representation of, and intervention on, life at molecular scale. The ability to decompose and recombine, create and modify, stock and circulate living-objects has dramatically increased. This has stimulated many academics to write about an objectification of life, particularly evident in the case of DNA codification.

This book intends to contribute to this wide debate by providing the analysis of contemporary reconfigurations of life with “a useful conceptual device or heuristic” (p. 1), *bio-objects* (hence the title). The thirteen case studies presented in this book span a wide range of subjects, including patients, foetuses, embryos, gametes, stem cells, genes, transgenic animals, genetically modified plants, artificial silicon cells and water. As implied by this Borges-like list, the authors are not concerned with providing a complete catalogue of “life in 21st century”, as implicated by their subtitle. Their aim, rather, is to introduce a new methodological approach, grounded on the dynamic processes of bio-objectification, which is understood is marked by a fundamental ambivalence. On the one hand, living-objects are controlled, processed, hybridized, collected and exchanged at a unprecedented rapid-pace. On the other, this reification process is not wholly new, complete or definitive, in that it draws upon the traditional processes of the domestication of life. While rendered highly malleable, these living-objects are not rendered inert, not even when codified in genetic sequences, or replaced by artificial *in silicio* models.

In a Foucauldian way, bio-objectification implies necessarily the creation of subjects. As highlighted by the oxymoronic relationship between *bios* and *thingness*, the similarity to a living-object raises issues about the moral status and the position of these new entities in a similar manner to animal/human, organic/inorganic, subject/object dichotomises. Sketched in a brief theoretical introduction, and then resumed and enriched in the empirical analysis that follows, this fascinating conceptual backbone basically follows the trajectories of these “out-of-place entities” through multiple levels of analysis. In particular, they address the interplay between the epistemic and the ontological dimensions of these entities, not only their moral status, but also the regulation of their substance in terms of traceability.

The 13 case studies are organised in three different sections. In the first section, “changing boundaries of human, nonhuman and society” are

analysed through the discursive and concrete shaping of bio-objects in relation to the attribution of life. Radically new forms of life, like transgenic mice, are represented through a contradictory process, in which both the comparison with ordinary forms of life, and the demarcation of their exceptional value, are aimed at silencing their suffering (Tora Holmberg and Malin Ideland). Likewise, *pluripotency* of embryonic stem cells is depicted through an analogous strategic insistence on homogeneity and heterogeneity, as compared to adult stem cells (Lena Eriksson). Even more traditional subjects/objects are also included. Clinical research patients are translated in interdisciplinary data assemblage by algorithms (Conor M.W. Douglas), while water is excluded from the designation of life in that it acts as an external vector for successful attribution of life (Ragna Zeiss).

The second section illustrates the way in which governance practices affect, and are affected by, the configuration of these entities as a result of their position in the living hierarchy or their proximity with the life itself. In the United Kingdom, the reaction against transpecies or chimeric embryos, leading to their prohibition in 2008, has created a discursive and material process of purification. Paradoxically, the production of new epistemological and material embryos, different from “true hybrids”, reinforces the boundary between human and animal (Nik Brown). In the case of prenatal screening and diagnostic test, technologies have participated in the construction of a new bio-object, the foetus, which in turn has shaped new moral responsibility regarding the normal/pathological divide (Nete Schwennesen). The crucial role that the relationship between genetically modified crops and traditional ones has played in the policy-making process is addressed (Janus Hansen). We also find the new responsibilities and care protocols implemented by the genetic analysis of susceptibility to pathologies (Aaro Tupasela).

In the third section, the “generative relations” of bio-objects are explored, particularly in the field of reproduction. In Germany and in Italy (studied respectively by Bettina Bock von Wülfling and Ingrid Metzler), the discursive and regulative processes that separate the embryo from kinship and familial projects, which have justified the strict limitations on assisted reproductive technologies, are then put into question through a process of re-connection interpreted as a “fruit-of-love”. Even when the paradigm of life-as-information is taken to its extremes, as in the case of an *in silicio* model of a cell, the generative capacity of life has an influence on the organisation of science (Niki Vermeulen). The last two studies concern the potential for genes to assemble biosocial solidarities, such as requests for non-discriminatory measures in insurance policies (Ina Van Hoyweghen), and the implications of the frozen gametes market in the significance and governance of suspended, cryopreserved life (Sakari Tamminen).

As stated in the introductory chapter, the concept of bio-object needs further development. However, it seems very promising particularly con-

cerning methods. The strongest contribution that this book offers the field is precisely the introduction of an effective tool for the study of this epochal change, conceived within a conceptual framework that is clearly inspired by Foucault. Here I am referring to the authors who developed aspects of the “molecularization/geneticization thesis” (in particular Rabinow, Rose and Novas), but also materialist analysts of biomedicine (such as Sunder Rajan and Cooper), or biopolitical philosophers (such as Agamben and Esposito). According to this perspective, the present must be read in the light of an epochal change displaying the intensification of control over life. This search for belief and power systems (*épistémé*) is useful for drawing connections between laws, epistemic apparatus, governance, economic circuits, social relations, representations, and so forth. Simultaneously, the willingness to find out the spirit of an epoch expresses a tendency towards the whole and the structure. A willingness that is complemented with a sensitivity, proper of Science and Technology Studies, toward objects, their agency, their ability to mediate, as well as their discursive and material trajectories. The conceptual framework of bio-objects is an analytical tool that is as malleable, flexible and generative as the forms of life (or non-life) that it aims at studying. Above all, it is capable of combining a detailed analysis of case studies with a broader perspective on the transformation of life within and beyond biomedical research.

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Sarah B. Franklin

Biological Relatives: IVF, Stem Cells and the Future of Kinship

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Thirty-five years after an In Vitro Fertilization (IVF) procedure has for the first time lead to the birth of a living human being and five millions test-tube babies later, ethnographic accounts witnessing how IVF has spread around the globe proliferate. In the meantime, a flourishing reproductive transnational industry has emerged and the use of human reproductive substance for regenerative medicine has become so much desirable and legitimate as it is profitable for global pharmaceutical and health services market.

Among this collection of works, Sarah Franklin's *Biological Relatives: IVF, Stem Cells and the Future of Kinship* surfaces to wisely refocus on the very scope of ethnographic accounts in theorizing socio-biotechnological dynamics and to make a point about the way in which the normalization