



Social Text 106: Interspecies. Julie Livingston and Jasbir K. Puar (eds). Duke University Press, Books and Journals, Box 90660, Durham, North Carolina 27708-0660, USA. 2011. 195 pp. Price not mentioned.

The notion of interspecies is potentially a fascinating idea that at its heart questions the assumed distinctions between humans and non-humans. It is also an idea that challenges not just the biological understanding of the human, but also the complex socio-political nature of biological knowledge. The edited volume under review attempts to analyse some aspects of this notion by drawing on interesting case studies and is largely influenced by the posthumanist tradition. The interpenetration of technology and the body, such as in the creation of cyborgs, catalysed the posthumanist argument that the organic body cannot be the defining characteristic of categories such as human.

Is this topic relevant for scientists? It is for the simple reason that it is eventually an attempt to understand the nature of being human. It is obvious that the hard distinction between humans and animals is a product of certain human interests. But how are these distinctions to be grounded? Is there stability to such distinctions when we critically enquire into them? This book expands these questions by considering forms of life as varied as pests and viruses along with the triad of humans, animals and plants.

As the editors note, the notion of interspecies challenges traditional taxonomical distinctions and highlights the historical and sociological processes behind these classifications. By critiquing modern taxonomy, the grand project of interspecies studies is to 'go beyond species' by discovering other kinds of rela-

tionships between objects in nature. Foucault's influential idea of biopolitics arguing for the historical and ideological construction of the human as a species is an influential theme in this project.

The essays in this volume draw extensively from race studies, post-colonial studies and science studies. They give us an inkling of how to rethink and thereby expand the meanings of objects belonging to biology and medical science. Cohen's essay on the virus is one such attempt. He begins by pointing out that 'viruses were parasites before they were viruses' (p. 22) and were first understood through the model of parasitism, which itself was derived from ancient political theories. By playing on the nature of a parasite, Cohen points to the inherent paradox in our very attempt to define a virus. These are exemplified in linear narratives which science uses to describe the effects of virus and in so doing, Cohen suggests, that we forget the larger politics in the creation of such narratives. As he remarks, how we think about viruses is precisely the way we think of the vulnerability of humans (p. 29).

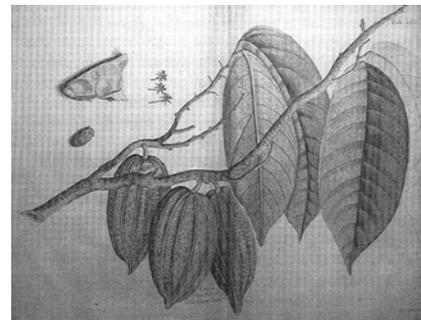
The goal of xenotransplantation (transplants using animal tissues and organs on humans), as Sharp describes it, 'is to merge human and animal species within single bodies' (p. 45). There are many hidden historical narratives which scientists use in order to promote and legitimize xeno research. This essay describes the early stories of xeno transplantation, including the first famous case of a baboon heart transplant on a newborn child. The early use of simians for xeno transplants was catalysed by the belief that they are a close relative of the humans. However, the shift to pigs as an ideal candidate for transplantation has interesting consequences for the idea of interspecies. The important point made by Sharp that science 'creates' its objects in the way it defines them is central to the theme of interspecies.

A similar story of the creation of an object called 'chocolate' is described by Delbourgo, where he points out that this object is created through the relation between 'botanical science, colonial trade, and Atlantic slavery forged between West London and the West Indies in the early modern period' (p. 72). This trend is part of a larger historical process where botanical objects were not only categorized in particular ways, but were also taken into the colonizer's culture

through the use of science. A good example is the colonial botanical engagement with Indian plants. Echoing the colonial practice in India, Sloane, who is described as the inventor of 'milk chocolate', builds his knowledge based on already available local knowledge and skill. More importantly, the story of cacao goes way beyond classification of plants or creating new objects for science. As Delbourgo notes, Sloane's work 'was part of a broader natural-historical enterprise that included intelligence gathering concerning foreign peoples' (p. 87). Humans in other cultures were studied and categorized like plants were; humans themselves began to be classified racially as in the use of the word 'chocolate' as a racial term.

The complex nature of scientific imagination is also well illustrated in the creation of the very idea of species. Anker and Franklin's essay begins with the idea of the specimen; collecting specimens and exhibiting them were not only the precursors to modern biology but also to photography and modern art (p. 104). The notion of a museum and exhibition of curios were integral to the development of the institutions of science. Technological vision has changed the idea not only of specimen, but also of vision. This essay focuses on foetal imagery – as can be expected, the foetus plays an important role in many debates on speciation, evolution and the idea of life itself. The interview with an artist (Anker), as part of this essay, opens up new ways of articulating visual representation and how that feeds into our ideas of species.

Starting somewhere in this essay, the book begins to lose steam. The remaining



Cacao engraving by Michael van der Gucht, in Sloane, *Natural History of Jamaica*, vol. 2 (1725), table 160. Botany Library, Natural History Museum, London. Photograph by James Delbourgo.

essays seem to have a different scope altogether. Ahuja discusses the case study of using insects as a form of torture practised on a suspected terrorist by the CIA. While there is an interesting thread of relationship between truth and torture, and the role of insects, in this particular case, the essay meanders too far away to make a coherent argument about interspecies. So also Mavhunga's essay about the historical *construction* of natives as pest (and their eventual *transformation* as pests). The transformation of the human into an insect was accomplished in part by invoking the legitimacy of scientific narratives. Mavhunga points out that colonialism, particularly in Africa, was 'obsessed with controlling pests' (p. 153). As a perverse extension of this, pesticides and chemical weapons enable the shift from treating 'people like animals' to treating 'people as animals' (p. 153). Politically, these notions of pest and pestilence were used to dub blacks as pests and vermin, a trend which was used to similarly describe other groups such as guerrillas. In a sense this essay is an indictment of modern civilization and uses the language and objects associated with pests to interchange humans and pests when convenient. But neither these two essays nor the last one (on an idiosyncratic exploration of the human-dog complex) really engage sufficiently with the thematic exploration of the earlier parts of the book.

The unevenness of handling this theme might make one think that there is really not enough material to sustain a coherent argument for interspecies. Moreover, the style in which these arguments are presented adds to this worry. While acknowledging that disciplines such as post-colonial studies have their own vocabulary as well as styles of argumentation, one cannot but be distracted by an excessive internal soliloquy that characterizes this book. Reading the book, I was trying to imagine how a scientist would respond to these broad claims, poetic hyperboles, 'literalizing metaphors' and in general, a tendency to make sweeping generalizations based on a snippet of an insight. Much of the material in this book might seem to play excessively on historical and cultural meanings of words. This engagement with language is precisely what scientific writing wants to avoid and hence one can expect a dismissive scientific response to these arguments.

However, can the biological sciences continue to behave as if other disciplines in the social sciences and humanities, including philosophy and literature, do not matter to their claims about the world? Can biology continue to immerse itself within its own narrow disciplinary and discursive boundaries, and refuse to engage with new conceptualizations of human and the very notion of life? More importantly, as this collection shows, whether biology as a discipline wants to do that or not is not really the point. The question is merely how long can they ignore these developments that will eventually and radically change the way we understand biology as a discipline and humans as a life-form.

Finally, I am disappointed that the book does not take its own lessons seriously. Although there is a consistent critique of Eurocentrism in science and biology, the book itself is a classic example of Eurocentric reflection on the ideas of nature and species. It is ironic that in these essays, the authors do not engage with non-Western notions of the distinctions between humans and animals, or the many complex formulations of what it is to be human, such as from the Indian traditions. While these essays critique the Enlightenment's project of separating humans and animals, they also show a marked disinterest in how these entities are conceived in other world traditions. Along with this Eurocentrism of the content, there is also the matter of style. It seems to me that the authors have made little effort to make this text meaningful to scientists, even granting that scientists are notoriously indifferent if not inimical to such efforts. There is so much of self-indulgence in the style of writing as well as in some of the arguments in the text that the notion of interspecies begins to sound like a concept in literature! And that is a pity for the book promised much but like the snake which swallows its own tail, the book is consumed pretty much by its own fetishization of its discourse.

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Susan Gottesman and Caroline S. Harwood (eds). Annual Reviews, 4139 El Camino Way, P.O. Box 10139, Palo Alto, CA 94303-0139, USA. Vol. 65, xi + 661 pp. Price: US\$ 89.

This volume contains 31 in-depth review articles or chapters covering diverse aspects of basic microbial biology (function and regulation of DnaA in DNA replication, capsule biogenesis, mechanism of protein quality control), microbial pathogenesis and interaction with hosts (bacterial as well as protozoan parasite) and well written reviews on microbial evolution.

It opens with Hiroshi Nikaido's (University of California, Berkeley) reflections on his long and fruitful career as a microbiologist starting from post-WWII Japan to Berkeley. The opening chapter is a treat to read as it describes how the combination of intelligent work, and feedback from colleagues and peers, can contribute to fundamental discoveries. Nikaido gives a nice illustration of his fundamental studies with lipopolysaccharides, a unique component of the bacterial outer membrane and the discovery of porins, which function as a molecular sieve, preventing the influx of large or lipophilic agents.

The book is treasure-house of microbial pathogenesis in general, as at least nine chapters cover the biology of microbial pathogens and host-pathogen interactions, including many pathogenic bacteria (*Streptococcus*, *Brucella*, *Coxiella*, *Staphylococcus*, *Campylobacter*) and protozoan parasites (*Leishmania* and *Giardia*).

Chapter 7 by Omsland and Heinzen describes the biology of *Coxiella burnetii*, the causative agents of human Q fever, long considered as an obligate intracellular bacterial pathogen. The chapter is interesting, as it gives an in-depth perspective of the life of an obligatory pathogen and its adaptation tactics to use the host resources. This review describes how understanding and gaining information from genomics tools, including metabolic pathway reconstitutions and nutrient typing allowed researchers to culture this obligatory pathogen *in vitro*, opening up new and exciting opportunities to study the biology of an obligatory bacterial pathogen.

The theme of microbial pathogenesis and pathogen biology in general is nicely