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Editorial Geoforum

A Geography of Monsters?

At the edges of the recent mappings of human and non-human genomes are emerging uncharted arenas and animals. Modern myth-makers in the media record these using the same devices that medieval map-makers fabricated the boundaries of their known world, marking these new natures with images of outlandish beasts, with the promise of new natural bounties or warning signs that 'here be monsters'. A cursory glance at the contemporary press reveals Italian scientists notching up another milestone in the cloning of mammalian species, with the creation of the Halflinger foal named Prometea. In the same week scientists in the UK report growing concern over the harm posed to animals by cloning, warning that even apparently healthy cloned animals have internal abnormalities. The use of transgenic animals multiplies throughout biomedical research networks, reversing the decline in laboratory animals, rekindling debates in the media and other fora about the closed worlds of laboratory practice and their connections to the value of science and the societal values.

Often lacking economic, political or ethical context, these creatures emerge disparately in news stories about health, technology, agriculture, sport or art, signifying something of the complex muddying of categories at the edges of our known world. What unites these media articles is their presentation. These media stories do take different forms, featuring either scientific visionaries or miscreants, popularised as stories of discovery or danger. Yet all are accompanied by images of these animals in their different guises, as miraculous objects of human ingenuity, as new medical hope or as suffering laboratory subject. Geographers have recently identified significant starting points for mapping these transgressive technologies within the biosciences, emerging from theoretical attention to the reconstruction of the boundaries between nature and culture, the human and the non-human (Whatmore 2002; Spencer & Whatmore 2001; Castree & Braun

2001). However, there has been little attention paid to role of aesthetics in these boundary crossings. In taking valuable insight from various forms of non-representational theory, the focus on the materiality of practice has perhaps made it more difficult to hold in focus the way that visual and other aesthetic forms contribute to the conditions of existence for these new organisms and biological practices. There is a critical need to chart the geography of these 'monsters' to understand more of the complex of practices through which their representations and realities are being fabricated by science and culture, both inside and outside of the laboratory.

One of the most vivid examples of the contested role of the visual in the creation and circulation of transgenic organisms is in the ethical and aesthetic debates raised around the work of Eduardo Kac, professor of art and technology at the School of Art Institute of Chicago. In 2000 Kac apparently commissioned the creation of a transgenic rabbit from researchers at France's Institut National de la Recherche Agronomique. INRA technicians took green fluorescent protein from a Pacific jellyfish, and spliced it into the genes of a rabbit zygote. The resulting albino rabbit, which Kac called Alba, glowed green when placed under special lighting. However, the creation of this transgenic animal was not the intended end point for the art project. The living creature was to be shown at an exhibition of digital art held in the Provençal city of Avignon in June 2000. The artist intended to create a small living room for the animal, recontextualising the laboratory animal as fluorescent family pet. He then planned to take Alba home with him to Chicago, to live out her days as a domestic rabbit.

The production of this transgenic rabbit caused a protracted transatlantic debate between scientists, artists and media commentators (Cook 2000). The furore was not over the scientific techniques, for such practices are now widespread. Fluorescence genes have been used in scientific research since the mid-1990s, when scientists at Stanford University began splicing these genes into the tumour cells of experimental animals. The production of the animal, although expensive, was scientifically relatively straightforward. Rather scientists protested over what was seen as a frivolous use of the

genetic technique, trivialising the level of justification needed for germ-line genetic manipulation to that of aesthetic discourse.

Scientists at the INRA never released the rabbit to the artist and his family due to these protests over her creation. Instead the rabbit travelled Europe and the US as a digital photograph, a luminous green iconic rabbit. This accompanied the artist's campaign for permission to exhibit the rabbit to public audiences and ultimately to take her home, to demonstrate the care he said humans should give their transgenic creations. However, the photograph provoked further controversy over origins and authenticity. The INRA claimed that the brilliantly glowing photograph of Alba was a fake, that only the eyes and ears of the rabbit would be green under ultraviolet light, as fur was dead tissue that didn't express the gene. Although initially happy to collaborate with the artist on the genetic manipulation of the rabbit, this photographic manipulation was viewed as a breach of trust, with the institute accusing Kac of fabricating data for personal use (Philipkoski 2002). Kac countered that no techniques beyond the use of ultraviolet light and a yellow filter had been used to construct the controversial image.

The fact that these debates have been over the visual expression of jellyfish genes, whether in the rabbit's body or in a photograph, is enlightening. The luminescent gene is valuable to scientists as such genes are used to tag certain genes or proteins, making visible in the animal form traces of new genetic material otherwise invisible within cell nuclei. Rabbits are not the only domestic species to now glow in the dark. Attempts to develop transgenic pigs with organs acceptable to human immune systems have also used these techniques. In pursuing these animals as sources of organs for transplantation into humans, luminescent markers are used to indicate the presence of human immunological genetic material, resulting in hybrid piglets with fluorescent snouts and trotters. These visual modifications of animal form open up opportunities for scientists to connect internal biology to external morphology, yet they also offer pertinent cultural markers of monstrosity. At the heart of the battle to create and colonise these new techno-natures, the boundary between the internal and the external biology is remade, as science and culture struggle over the visual morphology, species identity and the connection between

animal aesthetics and ethics. The visual fabrication of animal form is not trivial in these encounters.

This difficulty is well known to the scientists involved in these debates. The massive breeding failures that accompany each new cloned or transgenic animal are downplayed in the emphasis on the final successful animal photo call. Ron James, involved through PPL therapeutics with both the production of Dolly the sheep and the development of transgenic pigs, put it this way in an interview with *The Guardian*. 'James admits that "genetic abnormalities" can occur. So how many animals are born abnormal? "Taking all the experiments we've done, I would guess it would probably be about half." Most of these victims have internal disorders, such as kidney malfunctions. James says: "There's been nothing you'd regard as being a monster. We haven't produced animals with two legs, or three heads, or anything like that." He continues: "You have to look at whether the end justifies the means".' (Clark 2001)

The end came for Alba in late 2002. Her death brought as much controversy as her creation, with artist and scientists disagreeing about both her origins and her fate. The INRA now claim they would not have agreed to engineer one animal specifically for the artist and that the rabbit had been chosen by Kac from a number already bred at the laboratory facility. Her death, at 4 years old, was seen as normal compared with the lives of other laboratory rabbits at the institute. Kac, however, contests all these claims. In his view, Alba is not 4, and was bred specifically for him in January 2000, and is possibly still alive. If dead her 2 ½ years compares badly to the 12 years that pet rabbits can live. However, he believes the INRA might be declaring the rabbit dead prematurely to end the two-year barrage of media attention on their activities. Whichever, is the truth, Kac will never realise the final phase of his project, to take Alba home as a pet, though her luminous disputed image lives on.

So what are the links between these battles to locate the birth and death of a transgenic rabbit and the value of tracing a geography of monsters. To go back to the place of her production, there appears a potent closure of expertise around the scientific origin of the

rabbit, as an authentic fabrication only if morally and materially bound through the practices and spaces of science. The research institute emerges from these battles as the only legitimate locale through which new kinds of nature can be produced and validated, and from which they are to be disseminated or controlled. From this perspective the work of Kac seems to open up a productive critique of a closed set of genetic technologies, with his artistic practices shedding light on the politics of the laboratory space and questioning the relationships with nature being created there. Certainly it is a powerful indication of the authority of scientific subjects to speak for and, in this case literally, control the circulation of these objects of hybrid nature, whilst symbolically remaking distinctions between reality and representation in the contestation over the animal's image.

However, this opening up of hybrid origins is not the only important site for tracing the politics of technoscience. From their creation in the laboratory, the future of other transgenic creations, unlike Alba, will be to inhabit the multiple networks of farming, medicine and pet-keeping outside of the laboratory. Here a more cautious reading of links between the representational practices of the artist and scientist emerges. Geographers have been particularly sensitive to the interlinking of the artistic and technical manipulation of nature, through the commanding geometries of the landscape perspective (Cosgrove 1985), or the enframing of nature within the practices of colonisation (Gregory 1998). Art, as well as science, can be expressions of power. There are thus questions over whether this shift in biological practice from technocratic engineering to socially acceptable art form may in fact facilitate the acceptance of further, more radical, manipulations of nature across different arenas. Science, as Latour reminds us, cannot move out of the laboratory until the world is reconfigured to laboratory conditions (Latour 1988). Much of this is likely to be achieved through the rewriting of the relations of agriculture and medical sciences from the centres of the research institutes. However, the authoring of novel forms of nature and culture, exploring the mutability of animals and human bodies within visual culture, also plays a role.

There are already disquieting signs of an inexorable move towards these forms of transgenic animal futures within aesthetic realms. Whilst the popular acceptance of transgenic organisms has been slowed in European controversies over the consumption of GM foods, or mired in regulatory concerns over the risks of xenotransplantation, aesthetics appears an increasingly potent driving force in the popularisation of these novel forms of nature. 'Underwater World' in Singapore has just opened a new display, named 'jelly world', in which jellyfish are displayed alongside a range of red, yellow and green transgenic zebrafish, their colour derived from the fluorescent protein genes of the jellyfish and sea anemone. These fish, developed at the National University of Singapore have yet to be produced on a large scale commercially. However, hardy ricefish, which contain jellyfish fluorescence genes, have been on the market in Taiwan, Japan, Hong Kong and Malaysia since Spring 2003, and look set to be traded to private aquariums throughout Southeast Asia and beyond. These are the first transgenic animals to circulate widely outside of the laboratory exchange of transgenic mouse strains. Perhaps the ethical status of fish means that they are less likely to provoke the uproar of a genetically modified rabbit, however, it does indicate that there is nothing trivial about the role of aesthetics in the development of these new forms of hybrid nature.

Geographers have previously proved adept at tracing the complex and multiple connections between power, nature and visuality that apparently operate here in new ways. The contestation around scientific and cultural visions in the production of the transgenic rabbit and the commodification of a transgenic aesthetic in the circulation of hybrid fish suggests this is an important parameter for understanding the textures of the 'post-natural' world. In which ethical and aesthetic arenas are we prepared to accept the transgenic fabrication of nature, and to whom do we entrust the development, and subsequent representation of these creatures? In tracing the multiple origins of transgenic animals within the disparate worlds of medicine, farming and pet-keeping there are pertinent ethical questions around which ends justify which means. Yet throughout all of these arenas aesthetics also plays a crucial and ambiguous role. The visual has been crucial to the challenge to practices of laboratory animal husbandry, whilst it is also central to the development of novel pets, the pursuit of visually perfect food, and,

ultimately, the aesthetic and technological enhancement of human bodies. Yet we still know little though about the boundary between aesthetically acceptable hybrid and monstrous animal in the imaginations of all of us in the different locations caught up in the creation and inhabitation of these worlds outside the laboratory. These more-than-human geographies have multiple connections to the futures of our social, cultural and bodily geographies.

Finally, there are also pertinent questions here about the role of critical geographers in tracing the complex boundary crossings enacted through these cultural and scientific practices. We need to be mindful of the connections between epistemology and ontology in our mappings of these hybrid geographies, for our own engagements with and attempts to represent the textures of contemporary technoscience chance the same potentially ambivalent political and moral implications as the work of artists like Kac. Our explorations of hybrid geographies may have the potential to both contest and facilitate the aesthetic and genetic mutability of animal bodies and future natures. In tracing these transgressive nature-cultures we thus need to think whether and where we might want to redraw boundaries, to identify the ethical contexts or aesthetic moments in which we might want to keep agencies, entities and animals from becoming too entangled, without simply reasserting a purified human-animal divide. In the challenge to envision a geography that is beyond the human-nature divide we need to be sensitive to these complexities, aware of our responsibilities to the multiple agents constituting these terrains, and the politics of our practices in representing them.

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References

Castree, N. & Braun, B. (2001) *Social Nature: Theory, practice and politics* Blackwells, Oxford.

Clark, A. (6-1-2001) 'On stage with the supermodel sheep' *The Guardian*..

Cook, G. (17-9-2000) 'Cross hare: hop and glow/Mutant bunny at heart of controversy over DNA tampering' *The Boston Globe*

Cosgrove, D. (1985) 'Prospect, perspective and the evolution of the landscape idea', *Transactions of the Institute of British Geographers*, vol. 10, no. 1, pp. 45-62.

Gregory, D. (1998) "Power, knowledge and geography - The Hettner lecture in human geography", *Geographische Zeitschrift*, vol. 86, no. 2, pp. 70-93.

Latour, B. (1988) *The pasteurization of France* Harvard University Press, Cambridge, MA.

Philipkoski, K. (12-8-2002) 'RIP: Alba, the Glowing Bunny' *Wired News* http://www.wired.com/news/medtech/0,1286,54399,00.html

Spencer, T. & Whatmore, S. (2001) 'Editorial: Bio-geographies: putting life back into the discipline', *Transactions of the Institute of British Geographers*, vol. 26, no. 2, pp. 139-141.

Whatmore, S. (2002) *Hybrid geographies: natures cultures spaces*, Sage Publications, London.