Exploiting the Archive:

And the animals came in two by two, 16mm, CD-ROM and BetaSp

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G. Davies (1999) 'Exploiting the archive: and the animals came in two by two, 16mm, CD-Rom and BetaSP' Area 31(1): 49-58.

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Summary: *From an account of the construction and subsequent exploitation of the film archives at the BBC's Natural History Unit this paper explores the ways that animals are embedded in the different cultures of care, control and commodification in the zoo and the wildlife film-making unit. Network analysis is used to account for the similarities and tensions between these forms of animal exhibition revealed in the electronic zoo at Wildscreen World.*

Introduction

The world's first purpose built wildlife and environment media attraction is set to open in Bristol at Easter in the year 2000. The centre, called *Wildscreen World*, is going ahead as part of the UK Millennium Commission's funding of half the £82 million cost of developing a 10 acre site of the Bristol docks. According to current publicity material this £22 million centre will consist of an electronic zoo, the ARKive interactive databank of endangered species, a large format (or IMAX) cinema and the first museum of wildlife film and photography (http://www.wildscreen.org.uk). This paper is concerned with two elements of this exhibition: the IMAX cinema and the electronic zoo[1]. It looks at these developments through their associations with natural history film-making; relating this to recent work in geography on the exhibition of animals to reflect on the implications of these plans for understanding the shifting cultures of care, control and commodification of animals.

The paper starts from work on the zoo, which examines how the trade and exhibition of animals in the nineteenth and early twentieth century zoo has played a key role in creating and maintaining boundaries between nature and culture. Secondly, I suggest a way of approaching the developments in the electronic zoo which makes use of the work of Latour to understand the associations developed around traditional zoos, whilst also drawing attention to the new processes of 'purification' or boundary making associated with this emerging form of animal display. The subsequent sections of the paper present empirical material from my research within the BBC's natural history film-making unit which illustrates and further explores the practices through which animals are captured, stored and exploited in the electronic zoo. Concluding, I suggest that through this approach it is possible to follow the networks of translation and purification through which animals are inscribed into film archives, and identify the changes in filming technology, broadcasting regimes and audience expectations that have led to the evolution of the electronic zoo at the expense of traditional animal exhibits. Used in this way a network approach offers a productive method to describe and explain these changes and to comment critically on the contradictions which emerge from them.

Changing times at the zoo

Firstly, I want to draw upon insights revealed by recent work on the place of animals in cultural geography as a starting point for understanding the collection of animal images in the electronic zoo. In a series of articles challenging the anthropocentrism of contemporary geography, various authors including Wolch, Emel and Philo, have reasserted the importance of incorporating non-human animals into explanations of social life (Wolch and Emel, 1995; Philo, 1995; Anderson, 1995, 1997). In this research

the different forms and functions of the nineteenth and twentieth century zoo are revealed as one locality for understanding human strategies for domesticating, mythologising and aestheticising the animal universe (Anderson, 1995). In her work on the exhibition of animals in Adelaide Zoo, Anderson explores the changing visual technologies as styles of animal display shift from menagerie style caging, to fairground experiences and naturalistic enclosures. With each incarnation the zoo displays a selection of species in different ways; reflecting changing cultural demands of the audience and aspirations of the city; and occupying a different position within colonial and zoological discourses and a global trade in animals. She concludes that the dramatisation of human intervention in non-human nature at the zoo inscribes certain boundary making practices between the rural and urban, mind and body, nature and culture through the social creation of nature[2].

The elaboration of the electronic zoo looks set to both extend and alter some these practices. I will explore these continuities and changes through the medium of natural history film-making. The development of the genre of wildlife films is an interesting story in itself for exploring changing popular constructions of nature, space and place (Davies, 1998). For the purposes of this paper, it also an important point from which to explore the transformations from the traditional to the electronic zoo[3]. Early in its fifty year history the BBC's Natural History Unit was involved in extensive filming from the confines of Bristol and London Zoo. More recently the Natural History Unit (NHU) has been contributing large amounts of filming experience, technological expertise and images of animals to the developments at *Wildscreen World*. There are some striking similarities between the position of animals within a zoo and the collection of animal images in the NHU archives. Both zoos and natural history films present animals as entertainment clothed in education; accumulating the resources to do so from overseas

and ordering them within metropolitan areas. Both focus upon a limited range of 'charismatic megafauna' as their main attraction, with displays of elephants, apes, polar animals and big cats providing the core of animal exhibitions. These animals are seen as the guarantors of large audience figures, provide the major sources of income for these institutions and are the main currency in global markets, whether traded as exotic beasts of the early nineteenth century zoo, as genetic material in an era of zoos committed to conservation, or as film sequences between producers and broadcasters. Over the post war period both the zoo and natural history films have also faced the self consuming challenge of offering entertainment as their basis of interest, the problem of continually re-marketing the same animals and of responding to the different demands of their audiences.

However, comparing zoos and natural history film-making also reveals differences. The zoo and the natural history film offer very different experiences of animals, they reveal these through different visual technologies, and they construct their audiences in different terms. There are also tensions between them, and the growing sophistication of natural history films on television is cited as one motivating force for the recent challenge facing zoos; alongside other factors such as concerns about animal rights, changes in ethology, increase in foreign travel and growth of ecological awareness (Marvin, 1994). Natural history films appear to have increased in popularity and profitability whilst zoos have suffered; the huge investment promised in the new *Wildscreen World* contrasts markedly with the threat of bankruptcy faced by London Zoo in 1991 (Montgomery, 1995). This comparison appears to reveal a shift in the location of power to accumulate value from the exchange and exhibition of animals, one that is based on the creation of a new division between the bodies and images of non-human animals that will be seen with the virtual exhibits in the electronic zoo. From the

heyday of the metropolitan zoo at the centre of a colonial empire, to the competitive expansion of television empires, this is a changes that has implications not only for the institutions themselves, but also for the networks of people, practices, technologies and, of course, animals in which the institutions are embedded. I will use some of the ideas of Actor Network Theory (ANT) as an heuristic to an account for these changing networks and to explore their implications for the changing interface between nature and society.

Nature, networks and geography

The adoption of ideas from ANT and science studies can be seen as part of an on-going geographical project to challenge the dualisms of Western experience and intellectual thought. Increasing numbers of geographical writers are attempting to transgress the dichotomies which characterise their discipline and find new ways to combine nature and society, society and technology, macro and micro within one explanatory framework (Bingham, 1996; Demeritt, 1996; Murdoch and Clark, 1994; Murdoch and Marsden, 1995; Hinchcliffe, 1996). ANT, as conceived in the work of Latour, Callon and Law, offers a particularly powerful vocabulary with which to pursue these claims (Callon, 1986; Latour, 1987, 1988, 1993; Law, 1991, 1994). There are now a number of thoughtful introductions to the scope and limitations of this work in geographical literature, and I don't want to reproduce these arguments here (Amin and Thrift, 1995; Murdoch, 1997a, 1997b; Whatmore, forthcoming). However, a summary of the tenets of this research is helpful to contextualise and develop my argument. In précising some literature about the theory and practice of network construction I suggest that most work has focused on the processes of translation to emphasise the heterogeneous entities from which the networks of everyday life are composed. In this paper I am simultaneously

concerned with the processes of purification, for accompanying the associations forged between animals, institutions and technologies in the shift from traditional to electronic zoos is a series of further purifications. Despite the achievements of academics in retheorising binaries between nature and culture, it is also important to consider how these distinctions are reasserted in the practices and orderings of the other actors and institutions under study.

Put simply, ANT offers a theoretical and methodological approach based on the creation of heterogeneous networks. Latour, in particular, suggests that academic understanding of contemporary life is hampered by reductive and deterministic explanations which result from divisions between the natural and human sciences and semiotic and materialist analyses (Latour, 1993). In place of such disciplinary divides ANT suggests that the study of contemporary society should start from a position of agnosticism. Latour advocates that the academic should abandon *a priori* explanatory categories, and follow the practices of actors as they make associations or translations between the different entities through which networks of social life are composed. As he suggests "The fact that we do not know in advance what the world is made up of is not a reason for refusing to make a start, because other storytellers seem to know and are constantly defining the actors that surround them - what they want, what causes them, and the ways in which they can be weakened or linked together. These storytellers attribute causes, date events, endow entities with quality, classify actors. The analyst does not need to know more than they; (s)he has only to begin at a point, by recording what each actors says of the other. [...] The only task of the analyst is to follow the transformations that the actors convened in the stories are undergoing" (Latour, 1988, 10).

This radical approach has been both theoretically and empirically productive for geographers exploring the interface between nature and culture. ANT appeals to a sense that growing numbers of entities in contemporary society, such as genetically modified organisms, span across the previously separate realms of nature and culture in an 'accelerated circulation of quasi-objects' (Murdoch, 1997a, 744). Theoretically, it offers an alternative way of attributing agency to non-human actors, for power is conceptualised as an emergent effect of network associations, which include both human and non-human entities. In its extension of the register of semiotics to all manner of message bearers whether textual, technological, institutional, or corporeal, ANT also appears to mirror a move toward embodied performance in geography (Serres, 1995; Whatmore, forthcoming). A further appeal of ANT to geographers is the spatial imagery of its vocabulary. The descriptive and explanatory power of ANT is revealed through a focus on the way that certain networks are able to exert influence over people and things distant in time and space. From so-called 'centres of calculation' the control of flows of material and ideas means that certain secure networks are able to make other entities mobile, stable and combinable; bringing home events, places or people enabling them to be aggregated and accumulated (Latour, 1987, 223). Latour uses the development of natural history classification as one example of this as a process of abstraction made up of a chain of heterogeneous activities. "Plants and animals were observed and collected in the field, they were transported from distant countries, they were grown in gardens or locked up in a menagerie, they were dried, preserved, sticked, mounted and arranged in a herbarium or cabinet, they were painted and described and ultimately they appeared in the printed definitions of a classification scheme" (Stemerding, 1993, 197). Through these networks, in which the zoo plays a key role, a handful of naturalists were able to derive a universal language of natural history and

visually dominate a world that nobody could command in the space and time of everyday life.

There are of course a number of pertinent criticisms of this approach, particularly from critical theorists unwilling to give up privileged perspectives from outside of networks (Haraway, 1997; Lee and Brown, 1994; Murdoch, 1997a; Singleton, 1993). Most of these are outside the scope of this paper. I do, nevertheless, want to draw out one point about how description, explanation and ultimately critical understanding can be derived from ANT. Empirical studies using ANT have tended to use its vocabularies of flows and hybrid objects to emphasise the way that "stable identities and fixed boundaries give way to formless, hybrid or cyborg objects" (Murdoch, 1997a, 731). The adoption of a vocabulary of networks tends to be applied to those arenas of science and technology where the processes of translation are most obviously demonstrated; and applied simply and uncritically ANT risks reducing analysis to a mere celebration of hybridity. There is less in geographical literature on the concomitant processes of purification that necessarily accompany each stage of translation. In theory ANT is not only concerned with the transgression of boundaries, but also with how divisions between humans and non-humans are instituted in the first place.

Latour (1994, 34) suggests "I want to situate myself at the stage before we can clearly delineate humans and non-humans, goals and functions, form and matter, before the swapping of properties and competences is observable and interpretable. Full-fledged human actors and respectable objects out there in the world, cannot be my starting point; they may be our point of arrival". Elsewhere he restates that it is a 'double separation' that he is trying to reconnect: not only one between the separate spheres of nature and culture, but also between processes of translation across this division and purifications

between them (Latour, 1993, 13). As Murdoch summarises "at one and the same time ANT seeks to understand the hybrids of heterogeneous material and the processes of purification which cleave these materials into Society and Nature" (Murdoch, 1997a, 744). The processes through which actors strive to enrol entities into networks by channelling and stabilising their behaviour will often result in the emergence of other purifications, reasserting identities derived from traditional categories such as nature and culture. This is more often stated theoretically than followed through empirically and removes an important critical insight of ANT[4].

In my research I spent approximately ten months within the Natural History Unit. Researching within the Unit library, in production offices, at Unit meetings and using unstructured interviews, I followed the flows of ideas, expertise and film around the Unit as researchers, producers, managers, cameramen, technologies, and animals attempt to impose their order on others, and the implications for the images of nature that result. The networks of natural history film-making that emerge are reconstructed historically[5]. From this historical narrative it is possible to trace the different ways that associations are forged between individuals and entities in the processes of doing natural history film-making. Material in the NHU archives and conversations with those responsible for constructing and maintaining these networks reveal the strong links between science and television in this process, yet they also indicate that other voices and ways of knowing about nature are persistently excluded. The genre of natural history emerges as a hybrid form as the natural, institutional and technological are combined. However, the programmes that result involve further purifications between nature and culture, materiality and representation. Animals, environments and technologies do occupy powerful positions within these networks, yet their agency is curtailed as others in the network attempt to control them. In charting the translations

involved in the extending networks of natural history film making further divisions emerge between the bodies and images of animals which are revealed in the shift from the early natural history broadcasts at the zoo to the appearance of animals in the electronic archives.

News from the Zoos

Post-war Britain offered a number of opportunities for the presentation of animals on television, with a vibrant natural history community expanding into popular publishing through initiatives like the Collins *New Naturalist Series* from 1945 (Marren, 1995), and the resumption of BBC transmissions in 1946. However, there were a number challenges facing natural history television which revolved around finding ways of inscribing or enrolling animals. Television in the 1950s had adopted the ethos of radio as a live electronic medium, yet funding was still one-tenth of that available to radio. Filming technology was cumbersome, severely restricting the places where programme makers were able to get near to animals. The existing conventions of wildlife cinema, seen in the films of the American director Walt Disney, were inappropriate for the educational remit of the BBC. Capturing wildlife on television therefore meant developing associations between naturalists, scientists, zoos, broadcasters and producers in order to create a new language and practice of natural history television. These first experiments predominantly took place in the zoo or studio and the early years of the natural history television saw a proliferation of television programmes showing animals in zoos. BBC television features in London produced *Looking at Animals* (1951) and *All About Animals* (1952) with George Cansdale[6] . David Attenborough presented a series of *Zoo Quests* (1954) from London studios, interspersing film footage of zoo collecting trips, with studio footage which introduced the animals close up. In Bristol

News from the Zoos (1959) was presented by James Fisher from a series of European zoos, with *World Zoos* (1961) later extending this format. *Animal Magic*, presented by Johnny Morris was one of the most successful series for the Natural History Unit and ran from Bristol Zoo for 21 years between 1962 to 1983. When ITV transmissions began in 1955, Granada actually built a studio within London Zoo where they presented *Zoo Time* with Desmond Morris until 1968.

The zoo was an important site for early wildlife television through which exotic animals could be enrolled into the first networks of natural history television. Access to all manner of animals could be guaranteed within the zoo and "you could get a signal out either into a post office or telephone wires or by the radio dish" (John Sparks, NHU producer, interview 13.6.95) in order to transmit the images live. The large size of early electronic cameras prevented the development of outside broadcasts further afield "simply because the technology was unwieldy, huge, massive; you needed 30 people with these great big machines" (John Sparks). The scale of operation required to film an outside broadcast meant that animals could not be approached outside the enclosure of the zoo or studio. The programmes resulting from these early did make 'good television', bringing in large audiences and satisfying the zoo's need for advertising and television's desire for popular programmes. John Berger (1979), writing on looking at animals in the zoo stresses that entertainment is offered through the sights and spectacle of animals like the elephants, gorillas and penguins and television could communicate this visual experience. The zoo was therefore an important site for natural history films where animals could be made stable for capture by outside broadcast cameras, mobile for transmission out of the zoo, and combinable into the schedules of domestic television. The alliance of interest between audiences, broadcasters and zoological

societies around a method of capturing animals on film contributed to the longevity of this format.

There were differences though between the experience of animals offered by television and the zoo. Television could not replicate the physical presence of the animal at the zoo, but it was able to innovate on the spectacle presented, offering active and intimate footage of animals. Initially expressed through the possibilities of human-animal encounters, the studio format meant that programmes like *Animal Magic* could offer a different position of identification for the viewer by showing presenters interacting with animals, transmitted to the intimacy of their homes. The early television broadcasts were also able to mask the obvious confinement of animals in the zoo. Awareness of the enclosure of animals was unavoidable in the inherited Victorian architecture of the zoo. The bars and cages had been an important part of the attraction of these captured wild beasts when they had first been built, but as audience sensibilities shifted they looked increasingly barbaric. In the 1960s and 1970s many zoos underwent extensive refurbishment programmes, replacing bare menagerie style enclosures with naturalistic habitats. Television, however, seemed better positioned to respond to public appetites for seeing animals without enclosures, capitalising on their apparent distance from the captivity of animals, whilst still offering a spectacular and often intimate experience of wild animals. The first associations between film-makers and zoologists around the location of the zoo thus laid the way for further divisions between their forms of exhibition.

Out of the zoo, into the archive

There were a number of technological and institutional developments which enabled film-makers to break the close links between zoos, studios and natural history films. The rise of field biology and ethology meant a growing number of scientists at research sites able to lead film-makers to habituated animal populations and specific behaviours. Film-makers could therefore approach and film animals outside of the zoo in those parts of the world, for example East Africa, where scientists were working. Strong associations developed between natural history film-makers and field biologists; for example National Geographic funded filming at Jane Goodall's research site in Gombé in exchange for copyright to the material. This impetus for change was reinforced by the changing regimes at the zoo. With the rise in experimental ethology and changing audience demands zoos wished to be seen to break their links with entertainment and to redefine themselves as more educational. George Cansdale who had been superintendent of London Zoo from 1948 to 1953 was one of the first casualties of this shift. In 1953 he was abruptly sacked by the council of the Zoological Society and his job divided between separate departments, reputedly because the academic experts and officials at the zoological society resented the success of his television appearances in which he was seen playing with and cuddling all sorts of animals (*Guardian*, 26.8.93). The changing location of filming from the zoo to the research site meant film-makers were able to claim a more 'natural' portrayal of animal behaviour. Their images of 'wild' animal behaviour increased the potential for intimate and dramatic storylines and images in natural history films, whilst protecting films from rising debates on animal ethics and environmental issues.

The distance between the zoo and natural history film was facilitated by a series of technological improvements which made film footage more stable, mobile and combinable. The use of celluloid for television transmissions, more portable film

cameras, better film stock and lenses allowed cameramen to film animals from greater distances and in lower light levels. Moreover, this celluloid footage could be edited, copied and stored as negative in the Unit vaults. Supported by the relative affluence of public service broadcasting in this era, the NHU pioneered the collection of footage of animals from all over the world. These networks provided footage for international series like *Life on Earth* (1979), which could be sold to a growing western market for films, and conserved in an archive that grew in depth and breadth. Innovation in these networks was provided through further technological initiatives; from developments in video and editing, through to more interventionist techniques like timelapse and electronic switching and behavioural modifications like imprinting of animals. Despite this use of habituated animals, the distance from debates around animal exploitation through processes of translation and purification enabled the Natural History Unit to innovate and accumulate material throughout the 1970s and 1980s, whilst the role of zoos was being disputed. In 1995 the vaults of the Unit contained over 2,000 completed films and video programmes, between 18 and 20 million feet of film negatives in the library, supplemented by a sound library with over 5,000 natural atmospheres and the sounds of over 1,700 animals (*NHU publicity brochure*, 1995).

Exploiting the archive

This archive has increased in value as the structure of the television industry has changed and rather than continuing to extend these networks of natural history film-making, the NHU is now concerned to control their circulation and protect the value within them. The values of broadcasting, defined as the devotion of institutional resources primarily to the making of programmes inspired by some sense of social responsibility, have been replaced by 'television' in which the priority is the

accumulation of financial power in order to play a part in the world market. Here the main activity is the buying and selling of programmes of interest to that market, acquiring film libraries, seeking cheap material to fill the new channels and the increased air time (Murdock, 1994). The increased competition in external television markets and has been supplemented by extensive restructuring in the internal markets of the BBC. These changes have combined to give the animals in the film archives an immense value. Having stabilised images of animal in the archives, the NHU is now looking at ways of circulating and aggregating value from them. The purifications in their construction between humans and non-humans, image and animal, means that the films themselves have a long shelf life. They avoid contemporary controversies in favour of a view of pristine wilderness and they have no actors in frame so can be easily re-versioned for further transmission and international markets with no repeat fees or translation problems. The high-quality images in trims and film sequences from these programmes are sought after by advertisers and are ideal for multimedia uses. Old footage can be re-edited to construct fast paced magazine programmes for a proliferation of new channels.

In 1991 the Natural History Unit established a separate department within the Unit specifically to explore new ways of using archive material. The key to exploiting these secondary uses of material has been to select, catalogue and copyright this primary material. In the same way that the architecture of the zoo reflected the embodiment of a way of structuring the natural world that was based upon the moral and intellectual structures of natural history; the architecture of the archives reflects a way of structuring the natural world that is based upon the definition and control of these intellectual property rights. Footage of animals has subsequently been sold to advertisers for use in television commercials, multimedia, videos, CD-ROMs and repackaged for new

programmes on American and European cable channels. Specialised skills have been marketed for new ways of filming animals in television dramas, adverts, feature films and music videos. These new avenues supplement existing income from BBC home videos and programme sales, and are reinvested in programme making and cataloguing and maintaining the library.

This extension and control of the television networks around the Natural History Unit has enabled a trade in animal images of a size comparable to the huge trade in animals previously associated with zoos. Some measure of its value can be gained from the announcement in 1996 of a 500 million dollar joint venture between the BBC and Discovery Communications (*Television Business International*, 10.96,3). In this deal the two broadcasters pool programme production, broadcasting resources and libraries. This enables the BBC to access Discovery Channel's broadcasting capabilities and expertise in a global documentary film channel without jeopardising their public service charter. Discovery, in turn gets preferred access to the resources of the BBC, in particular the library, enabling them to exploit fully series like *Life on Earth* and *Life in the Freezer*. Most of the $500 million dollars comes from Discovery Communications, so the value of this archive at the BBC can begin to be estimated. This agreement with Discovery Communications is just the latest addition to the translations and purifications in the extending networks of natural history film-making. By trading in images, rather than animals, it has thrived in an uneasy environment for the exchange and exploitation of real animals.

The Electronic Zoo

The proliferation of television channels and new ways of using this material seems assured to uphold the value of the archives in the short term. However, television producers are constantly exploring new ways of funding the expensive investment into technology required to keep large audiences and develop the spectacle of natural history films. The senior vice president of Discovery productions, Tim Cowling, suggests that for them "the future lies in taking wildlife to audience outside television by testing cinema venues and IMAX formats" (*Broadcast*, 15.7.94, 29). Keenan Smart, head of National Geographic talks about the inevitable expansion into virtual reality: “people will soon be able to swim with sharks, sit among lions and explore volcanoes” (*Times*, 11.9.91,27).

The IMAX screen planned for Bristol will form the centre piece of the new *Wildscreen World*. IMAX screens, using 70mm film to project images of wildlife onto screens measuring upto 95 feet wide and 65 feet (or eight storeys) high, will offer the latest developments in natural history film-making, showcasing the most advanced technology, the most stunning images and the most popular species and places. The potential of IMAX productions has been pioneered with the large scenics offered by natural history films, with some of the first IMAX films shot of penguins in the Antarctic, big cats and elephants in the Serengeti, and mountain gorillas. *Wildscreen World* will also provide a new way to access the natural history archives that have been compiled over the last forty years. As one producer in the BBC explained to me: "There is going to be an environmental record archive and the environmental record archive is going to contain pictures, sounds and information about the world's endangered species. Of course, where are they going to get the pictures? They are going to get the pictures from us, and some of the other organisations like Partridge and Television New Zealand and so on. And what you will have there is a data base which everyone can have access

to" (Michael Bright, Director of Wildvision, interview 4.6.95). This compares to the technical celebration on IMAX of the splendour and spectacles that forty years of wildlife film-making has enabled, instead offering a record of the endangered species, extinctions and environmental changes that have occurred in the same period.

This planned embodiment of the archives into an electronic zoo seems to fulfil its own metaphor. Zoos have lost out, unable to mask their origins in a particular type of imperial system, gathering and displaying animals from around the world; and unable to offer either the visual spectacles of natural history films, or security from accusations of cruelty. Film-makers meanwhile have created a new empire, collecting footage of animals in archives as a way of storing value in the global networks of circulating animal images, supported by the control of copyright, and the aesthetic power that their images of wild nature present. The drawing of boundaries between humans and non-human animals has maintained the value of the images in the archives, their sanitised views of nature removed from human intervention making them universal and ensuring that they can be endlessly circulated and re-edited. The distance between the experience of the 'real' animals being filmed and the experiences offered by film have been maintained through a purification between animals and images. The maintenance of these boundaries remains central to the authority of the representations of animals offered by the BBC.

By tracing out the development of this network, its translations and purifications, it is possible to understand and highlight the contradictions it embodies. These boundaries appear potentially unstable within the tensions in the *Wildscreen World*. Here, ever more intense and spectacular experiences of animals will be presented on IMAX, alongside an archive that documents decreasing animal herds, altered habitats, extinct

and endangered species. By constructing their empires upon the control of images of animals, television has simultaneously been able to accumulate value from the diversity of life on earth, yet also avoid any responsibility for ameliorating the threats that this has experienced. This juxtaposition of different views of the natural world within *Wildscreen World* looks as if it may be uncomfortable and the strategies of the Natural History Unit may seem short-sighted. We are perhaps not that far from seeing wildlife film-making again returning to the zoo, as these become the last homes of the big cats, apes and other animals upon which the wealth of natural history film-making has developed.

Conclusion

This paper has sketched out a complex and rapidly changing terrain, and there is certainly scope for more research on these shifting forms of animal exhibition. The process of collecting and displaying animals within zoos has endured for over 2, 000 years and the different forms these take provide valuable positions from which to explore the social construction of nature. The development of the electronic zoo is surely set to continue this long history. The shift to this form of animal exhibition impels us to ask questions about ways of ordering and intervening in the human and animal universe, as a system based on the texts of natural history and embodied in menagerie style enclosures moves into the image rich environments of the electronic age. Tom Veltre of the Bronx Zoo reflects on this new iconography of the zoo, looking forward with mixed feelings to "a cathedral filled with animal icons to remind us of the love we once had for a natural world long since gone" (Veltre, 1996, 29). This is a future filled with vivid images of animals, but devoid of contact with the natural world. The developments in the electronic zoo may offer more ways of seeing animals, but

through constructing their networks around purified of nature and culture, image and materiality the NHU *and Wildscreen World* have eschewed any responsibility for intervening in it. It is not only in academic discourse that "animals are evident [...] only as signifiers, denied lives of their own". (Wolch and Emel, 1995, 632). Through using ANT it is possible to explore what is marginalised, as well as what incorporated, in the new networks of the electronic zoo.

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Notes

[1] An earlier version of this paper was presented in a session on 'Animals, Agency and Geography' at the 1997 RGS/IBG conference in Exeter. I would like to thank Chris Philo and Chris Wilbert for inviting me to contribute a paper to this session and *Area's* anonymous referees for aiding its development.

[2] For further literature on the changing history of and cultural practices within the zoo see Hoage and Deiss (1996) Mullan and Marvin (1987) and Wilson (1993). Commentary on the recent commodification of aquariums can be found in Davis (1997).

[3] The Natural History Unit of the BBC in Bristol has developed a prominent position within a now global wildlife film-making industry. The Unit began in the 1950s through a chance encounter between the radio producer Desmond Hawkins and the naturalist Peter Scott and has since produced some of the most widely circulated images of the natural world on television with programmes like *Life on Earth* (1979), *The Living Planet* (1984), *Trials of Life* (1992) and the *Private Life of Plants* (1995). The institutional histories of the Unit stress its unique position as the oldest and largest centre for natural history film-making in the world, and emphasis its skills, technology and expertise in natural history television production (see for example Parsons (1982), or a series of anniversary programmes produced by the Unit: *Wildlife Talkabout* (1982), *Wildlife Jubilee* (1982), *Television and Natural History* (1986), *Natural History Theme Evening* (1996)). However, during my research on the development of this institution, I came across a very different account of the NHU which started the thinking behind this paper. One independent producer to whom I spoke passed over the BBC's pride in the history of its productions, stressing instead the ability of the Unit to fix values within the flows of television through the control of its archives. To him the Unit was "basically

just a zoo of pictures of animals" (Chris Bligh, audio-visual director of Media Natura, interview summer 1995).

[4] For an exception to this see Whatmore (forthcoming). In a paper presented at the RGS/IBG conference in January 1998 Whatmore explores how the mobility of animals, expressed in species variation, species movement and trade in animals is fixed by the purifications in environmental protocols into 'natural' areas such as Biodiversity Reserves.

[5] The terms from actor network theory which I found helpful in pursuing this analysis were purification and translation; and within the process of translation: inscription and enrolment. Firstly, in following how natural history film-makers created their networks I focused upon a process of inscription to refer to the filming of animals and environments through which they are incorporated into the network (Winston, 1993). The places and practices at the point of filming are keys to the construction of new nature-culture hybrids in natural history films, and natural history film-making can be understood as the generation of situated forms of knowledge about nature through the inscription of animals in different contexts. Secondly, I used the term enrolment to identify those associations of people and things which enable these situated knowledges to move over space. The practices, institutions, animals and technologies brought together in these translations form the networks of the Natural History Unit. The processes of purification associated with these networks refer to further divisions between categories such as nature and culture, animal and image, created and sustained through the functioning of these networks.

[6] George Cansdale was also the author of many books on animal geography in the 1950s, see Philo (1995).