Networks of Nature:
Stories of Natural History Film-Making from the BBC

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Abstract

In May 1953 the first natural history television programme was broadcast from Bristol by naturalist Peter Scott and radio producer Desmond Hawkins. By 1997 the BBC's Natural History Unit has established a global reputation for wildlife films, providing a keystone of the BBC's public service broadcasting charter, playing an important strategic role in television scheduling and occupying a prominent position in a competitive world film market. The BBC's blue-chip natural history programmes regularly bring images of wildlife from all over the globe to British audiences of over 10 million.

This thesis traces the changing aesthetics, ethics and economics of natural history film-making at the BBC over this period. It uses archive material, interviews and participant observation to look at how shifting relationships between broadcasting values, scientific and film-making practices are negotiated by individuals within the Unit. Engaging with vocabularies from geography, media studies and science studies, the research contextualises these popular representations of nature within a history of post-war British attitudes to nature and explores the importance of technology, animals and conceptions of the public sphere as additional actors influencing the relationships between nature and culture.

This history charts the construction of the actor networks of the Natural History Unit by film-makers and broadcasters as they seek to incorporate and exclude certain practices, technologies and discourses of nature. These networks provide the resources, values and constraints which members of the Unit negotiate to seek representation within the Unit, and present challenges as the Unit seeks to preserve its institutional identity as these networks shift. The thesis tells a series of stories of natural history film-making that reflect one institution's contributions and responses to the contemporary formations of nature, science, the media and modernity.

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Preface

On 15 September 1993, 3 weeks before enrolling for a PhD at UCL, I headed up to Shropshire on the train to the BKSTS[1] 7th International Wildlife Film-Makers Symposium. To bolster my confidence in approaching this new world and participating as an inexperienced researcher, I clutched a photocopy of a (successful) ESRC application form entitled *A Comparative Study of the Social Constructions of Biodiversity in the UK and the USA*. I was assured of my interest in nature as a culturally constructed concept, I was aware of some tensions between American and British television programmes, and I knew that post Rio, biodiversity was a word with some currency. I was interested in the way that concepts of nature, animals and environments were transformed within the different cultural contexts of the British and American media. I wanted to "explore the extent to which different cultural, economic and political contexts lead to distinctive social constructions of nature", and the extent to which "print and broadcast media in the UK and USA transform ecological concepts". I hoped that the symposium would provide just the beginnings of an exploration of the contribution of television communication.

I was not, however, ready to confront the enormous complexity of the industry, the people, the processes, the technologies and the films that were to form just a small part of my thesis. I was enthused and overwhelmed by 5 days of talks on "filming in extremes"; international aspects of programme making; children's programming; wildlife film-making courses; changing film formats; changing video formats; changes in special effects and editing; sessions led by commissioning editors, cable channels, young film-makers and narrators; as well as practical workshops, exhibitions and films. I was aware that all of these issues, people and technologies had relevance to the processes I was trying to explore. Yet, I was also struck that at no stage in their discussions about responsibilities to animals, environments and audiences had anybody mentioned biodiversity. The tensions between UK and USA film-makers became more ambiguous, dissolving at some points and more pertinent at others. In view of their reflexivity about these complexities, I was also increasing unsure about my limited perspective on nature as a social construction.

I could see that here was an intelligent, reflexive and disparate community of people, sufficiently motivated by the issues of their work to meet for a week in rural Shropshire to communicate their ideas, their enthusiasm, their fears and their skills. I could see areas of shared experience, interests, and concerns; but it was evident that we were talking different languages. I realised fairly quickly that to address the issues I was interested in, I had to let go my existing, and distinct, categories of science, media and biodiversity and to allow these people to explain to me how they viewed their world. This thesis presents the theoretical, empirical and practical implications of this decision as the research has developed over the next

[1]The British Kinematograph, Sound and Television Society

four years. It presents an historical account of the networks of natural history film-making as viewed from within the industry, and presents the stories of individuals as they negotiate their relationships to scientific practices, media organisations, technologies, animals and audiences in the process of constructing their own realities.

I
Introduction
Histories of Natural History Films

The basic problem that the film director has to solve is the whole question of imagination in an industrial society (George Pitman, 1944)

Nature is Imagination itself (William Blake, 1803)

1.1. Introduction: Stories of Natural History Film-Making

This thesis introduces a series of stories from the BBC's Natural History Unit in Bristol. These stories emerge out of my engagement with theoretical literatures in geography, media and science studies; and programmes, documents, interviews and participant observation in the Natural History Unit. From this research I have pieced together stories from forty years of wildlife broadcasting. These stories trace the shifting relationships between the scientists, conservationists, film-makers and broadcasters involved in natural history film-making, and their changing claims upon the content of wildlife films, upon the methods of filming animals and the ways that they construct their audiences. The thesis also charts the amazing persistence of this genre of natural history film-making, from the early experimental broadcasts of the 1950s, through to the recent designation of the Unit as a centre of excellence for wildlife film-making in 1993.

These forty years of natural history film-making feature an intricately overlain series of stories about the changing forms of nature, the media, and science. There are stories of nature depicted 'as red in tooth and claw', nature as community, nature in crisis and nature as spectacle. There are stories about technological forms and media genres, and of television's search for the new, within increasingly derivative and competitive media environments. There are stories about the popularisation and dominance of certain scientific discourses and practices through which nature has been represented in popular culture over the last forty years. There are also absences in these stories over the ability of natural history programmes to offer authoritative accounts of environmental change, or to open up considerations of environmental justice or animal ethics. I want to suggest that these stories of natural history film-making form an important contribution to the many ways that we tell "stories about stories about nature" (Cronon, 1992: 1375).

There are a variety of actors that recount and feature in these stories. These actors illustrate the changing actor networks of the BBC. Amongst them are accounts of the broadcasters, film-makers, and scientists, struggling to make sense of nature within the spaces between the media, science and everyday experiences, over the last forty years. There are actors who extend the traditional stories of the ways we relate to nature. For a key role is played by a series of new,

or previously overlooked, actors: the technological forms of television, film-stock and cameras; the materiality of the animals and environments; and the changing forms in which the audiences are made visible within the sphere of production.

The institutional formations of the Natural History Unit at the BBC provide the context for these accounts. These stories, therefore, can provide insight into one institution's contributions and responses to the accelerated articulations between the spheres of nature, media and science that are seen within some academic literatures, to constitute a crisis, or change, in the formations of modernity. The developments of natural history film-making involve a complex set of processes: the commodification of nature, the globalisation of images, the standardisation of expertise, set alongside the changing fate of animals and environments and shifting structures of the public sphere. These echo some of the unfolding stories of modernity. Discussions over the trajectories of modernity bring together a series of approaches in which the relationships between nature and culture play a key role. The work of Beck, Giddens, Lash, Murdock and others, pose questions around transformations of knowledges, risks, environments, communications, organisations, modernity and identity, in which the histories of natural history film-making are intimately embedded.

I have drawn upon this work for my research; however, I have found that there are absences, for there is little that works across culture, nature and communications. Discussions over modernity have instead worked to reify divisions between culture and nature, the country and the city. Discussions over modernity have focused upon the city as the basis for institutionalised science (Livingstone, 1995), the relationship between urban culture and communication (Thrift and Leyshon, 1992) and use metaphors from the city for the practices of everyday life (de Certeau, 1984). For much of this work, the city is where both modernism and post-modern are forged and "dramatically find their clearest expression" (Silverstone, 1994: 170). There is little that speaks to the cultural formations of television or the popular science of natural history.

This thesis is, therefore, concerned less in positioning natural history films within the movement of modernity into a new terrain of either late or post modernity, than with the suggestion that, in the words of Latour, *We have never been Modern* (Latour, 1993). The middle brow genre of natural history films, with their stories from middle England, and their middle class audiences, perhaps need a middle way, away from the high drama of late modernity and the hyper realities and flux of the post-modern. This middle way comes from recognition, not only of the *processes* through which nature is made and remade within the public sphere, but also of the *permanences* and stabilities of the genres, narratives and institutions in which these processes are embedded. In this middle way the conflation of the media and the modern, with the filmic and the urban, is replaced by positioning television within suburbia's particular and persistent mixture of the modern and the post-modern, nature

and culture, in ways that speak powerfully to the genre of natural history and to the commonplace geographies of everyday life (Silverstone, 1994, 1997). The philosophical separation of spheres of nature and culture are replaced with historically imbued notions of unstable boundary making practices, which examine not only the ways nature is represented apart from culture, but also with the cultural practices through which nature is accomplished (Cosgrove, 1990; Matless, 1994, 1995). Lastly, scientific expertise and popular representations of nature are re-examined, less as starkly counterpoised representations, and more through their emergence in particular situated knowledges of nature. Drawing attention to their shared locations, and shared practices, this examines the power of discourses of science through their ability to act over space (Murdoch and Clarke, 1994; Cooter and Pumfrey, 1994). In the words of Roger Silverstone, these spaces of television and popular science represent the soft underbelly of modernity, emerging both as accident and design as cultural formations that modernism has created to escape from itself (Silverstone, 1994).

In this chapter I want to introduce the Natural History Unit of the BBC as the setting for these stories of natural history film-making, and outline the dominant genre of wildlife films, through which they are told. From my starting point within cultural geography, I explore some of the ways that these representations of nature can be contextualised within disciplinary practices through which the divisions between nature and culture are (re)produced. The practices of natural history film-making span natural science and media production, working with complex associations of technologies, animals and discourses of nature. They therefore provide an interesting perspective from which contribute to contemporary geographical debates over the social construction of an 'artifactual' nature. The introduction then reviews the brief literature on natural history films, examining what is at stake in the ways in which nature is represented on television.

The chapter returns repeatedly to the constructed duality between nature and culture, through the subjects of natural history films, debates in geography, and constructions of modernity. However, understanding the associations of expertise and transformations of nature involved in the processes of natural history film-making requires working both with and between this duality. I therefore want to end the chapter by introducing the work of Latour, whose work I consider in the literature review, and who I suggest provides a way of dealing symmetrically with both the natural science and cultural production of natural history film-making, and positioning the stories of natural history film-making within accounts of on-going practices of boundary making between nature and culture, expert and lay, global and local, subject and object. Before that, though, I want to begin with a story that illustrates the potential of natural history films for understanding contemporary mixings of nature and culture.

1.2. Forty Years of Film-Making at the Natural History Unit

In January 1955, Heinz Sielmann's 20 minute film on woodpeckers was shown on British television. This short film on the secret life of a family of woodpeckers, by a previously obscure German cinematographer, was filmed with astonishing intimacy through the back of their nesting hole. It revealed aspects of the birds' parenting behaviour never before observed by scientists, let alone by a viewing public. Working in post-war Germany, in the midst of the developing discipline of ethology, the emergence of a new era of film technology and the founding moments of the German Green movement, Sielmann's film straddled the development of scientific investigation into animal behaviour and a new popular concern for the life sciences. Sielmann's agenda and methods as a cineaste were inspired by Konrad Lorenz, author of *King Solomon's Ring* (1952) and a determined pacifist in post-war Germany; the man whose observations and experiments are credited with inventing animal behaviour studies. Sielmann's studio was a stone's throw away from the Institute where Lorenz conducted his laboratory studies, and also from the technological developments happening at the Arriflex factory where the first lightweight and truly portable television camera was being developed (Lamb, 1996: 29).

The naturalist, painter, film-maker and broadcaster, Peter Scott, had first seen the film of woodpeckers at the International Ornithological Congress at Basle in Switzerland in 1955, and was convinced that the material filmed by Sielmann could revolutionise the profile of the limited wildlife programmes then being shown on the BBC. It was such an outstanding film that Peter Scott urged Desmond Hawkins, then a producer in Bristol, to invite the German director over to England. The subsequent success of the film is retold within a series of anniversary programmes from the Natural History Unit in Bristol. As Desmond Hawkins recalls: "When his woodpecker film came just suddenly into our *Look* programme, it really revolutionised it that night. The switchboard was jammed for an hour afterwards. It got the biggest appreciation figure the BBC had ever had except for the Coronation and it pointed the way"[2]. The popularity and potential for this type of programming was picked up by television executives in London, who were keen to find visualising appealing material for their new broadcasting medium, and the small television team in Bristol was given a permanent slot for natural history programmes.

From the outset wildlife films were criticised by colleagues and conservationists. Max Nicholson, then director of the Nature Conservancy Council, and one of the founders of the World Wildlife Fund (WWF) in 1961, was less than impressed by Sielmann's material and told Peter Scott so in a meeting: "I argued with him that his TV programmes were frankly escapist", Max Nicholson is recorded as saying, "that these birds that they record might not exist in a hundred years' time if they didn't draw attention to the environmental problems they faced" (Pearce, 1991:5). However, through this film, and through the methods of its production, there

[2]Desmond Hawkins, quoted in Post Production Script (Tx 1985) *Television and Natural History*, written and presented by Desmond Morris, BBC Natural History Unit Library

were to be other links with conservation and cultural critiques of European attitudes towards nature. A young artist named Joseph Beuys, who had been a former Luftwaffe colleague, worked with Sielmann on several of these projects. Working on film locations was a therapeutic process for the shell-shocked Beuys and many of his mature art projects recall hours and days spent observing animals from tiny hides waiting to capture moments of truth and action (Lamb, 1996: 29). The story is taken up by Simon Schama in his exploration of the practices and imaginings of German artists like Beuys and Kiefer (Schama, 1995), and also in popular politics when, in later life Beuys joined with Petra Kelly and others to help found the German Green Party.

This story introduces a particular configuration of heterogeneous actors as naturalists, scientists, film-makers, broadcasters, audiences, producers, conservationists, artists, cameras and animals are woven together in the construction of an important episode in the narratives of post war British attitudes to nature. (Versions of this story are found in Parsons, 1982; Lamb, 1996; Pearce, 1991; Mills, 1989; several BBC Natural History Unit anniversary programmes and numerous magazine and newspaper articles.) The thread linking these disparate institutions, discourses and practices is the twenty minutes of film featuring nesting black woodpeckers. The meaning of this short piece of film is contested: for Joseph Beuys the practices of observation and experimentation marked a way of experiencing nature that imbued his future work; for Konrad Lorenz film was to provide an important methodological tool for the development of ethology; for Max Nicholson the film presented a potentially unhelpful distraction from the pressing issues of trying to implement an international conservation programme; for the BBC the innovations of this intimate footage of birds offered a way forward for the presentation of wildlife on a visual medium. And, finally, for Heinz Sielmann the film provided the basis of a long and successful career as a wildlife film-maker. This story, therefore, introduces the desires and hopes of a distinct set of actors, marking the beginnings of a new way of visualising nature, and a new expertise that was on the brink of the developing worlds of the professionalisation and popularisation of knowledges about nature.

Forty years later the BBC's Natural History Unit occupies an important position in popular knowledges about nature. The steady style and narratives of natural history films, contribute a remarkably consistent genre in a contemporary period of shifting signs and intertextual meaning. The films have persisted in the schedules of the British television for over forty years, upheld by their safe reputation, and they now occupy an important position in a global market for films. The vaults of the Natural History Unit contain over 2,000 completed films and video programmes from all over the world, between 18 and 20 million feet of film negatives, supplemented by a sound library of over 5,000 natural atmospheres and 1,700 animals (source: NHU publicity brochure, 1990). The developments of natural history film-making can no longer be encapsulated in a single story or a single place, for their most striking characteristic is their scope. The first formations of natural history film-making have solidified

into a network that offers a global reach on nature, representing relatively stable images of nature, which have persisted over time. The centre of this network is the Natural History Unit (NHU) in Bristol. As a long term member of the NHU, and current head of its commercial division, suggests: "This is the home where it all started, and this is still the place where we are pushing the barriers" (Michael Bright, interview 24.3.95).

The NHU has no rivals for this long production history or the breadth of material it covers on radio, television and in the associated *BBC Wildlife Magazine*. (A filmography of the NHU's output from 1953 to 1996 is included in Appendix C). There are other natural history film-makers who compete with the BBC on individual programmes, notably *Survival* and *Partridge Films* in the UK, and *National Geographic* in the States. But none have succeeded in obtaining on-going commissions for series like *Wildlife on One* (1977 onwards) and *The Natural World* (1984 onwards), or the successes of blue-chip natural history blockbuster series like *Life on Earth* (1979), *The Living Planet* (1983) and *Trials of Life* (1990) through to *Private Life of Plants* (1995). These programmes, form the core of the Natural History Unit, and are the main vehicles for its characteristic form of natural history film-making.

The style of blue-chip natural history films was explained to me by John Sparks, series producer of the *Natural World* when I interviewed him in 1995. John Sparks is reputed to have coined the phrase, "blue-chip":

> "It just means basically that kind of film, you know, which has got no people in it. Lovely, natural history. Nature in the raw. Beautifully filmed. High production values, good editing, good photography that sucks you into a place" (John Sparks, interview 13.6.95).

The dominant genre for the presentation of natural history on television has developed through constructing images of nature in this way. It is 'nature in the raw', a nature without people, a nature in which the separation of culture and nature, humans and animals is, for the main, absolute. These films offer few clues to the processes of their construction by upholding a commitment to naturalism. They appeal to an authoritative science which presents an uncontested and universalised view of animal evolution and ethology. Their high production values: beautifully photographed, filmed and edited, seduce the viewer into this constructed world, offering an unmediated, and apparently authentic experience of nature. Blue chip films draw on the technological developments prefigured by Sielmann to screen intimate footage of nature from all over the world onto the televisions in our living rooms. As Roger Silverstone asks "Somehow it all seems so natural. And why not?" (Silverstone, 1986a: 90).

Television programmes from the Natural History Unit in Bristol have played a key strategic role in developments at the BBC, from the successes of the early television transmissions, through their visual impact in the conversion to colour broadcasting, and in the recent debates over the public service charter renewal. This apparently unassuming television genre speaks of

particular, and sometimes contradictory notions, of national identity and a mass audience; whether in the post-war focus upon reconstructing citizenship; or as a tool for promoting increased television sales in the sixties or in the Charter claims of the BBC to continue to represent a national forum in a global media environment. Inherent in these assumptions is a particular view of the value of natural history films themselves. Whether viewed as citizens or consumers, or indeed mixtures of the two, the audiences of natural history films are spared the guilty pleasures assumed of most television consumption:

> "The pleasure to be provided, quite naturally, is the pleasure legitimated in our culture - the pleasure of the unfamiliar, the pleasure of recognition, the pleasure of surprise or confirmation. The pleasure of the security of the forms, of the questions and the answers of television natural history. And the pleasure and confidence in the security of a gentle guide [in David Attenborough] who understands the limits of the medium, and our limits as receivers of its messages" (Silverstone, 1986a: 91).

Citizens are educated and the consumers empowered by the subject matter of natural history films, and the broadcasters and producers have, on the whole, been spared the critiques attached to other forms of factual programming. As Richard Brock, a member of the Unit from the 1960s to the 1990s, suggests:

> "Because of the nature of the subject, it's a laudable, safe, subject isn't it. I mean it's not controversial. So most people like it and apparently the reason that people say they watch wildlife films because it is a good thing to watch. They might not want to admit to watching *Coronation Street* but they say - Oh that nice David Attenborough and that lovely film about foxes. And therefore it's not the sort of subject you attack. [...] You know it's almost a bit unsporting to have a go at natural history. It's a good subject" (Richard Brock, interview 15.6.95).

Natural History films have occupied a strong position in domestic scheduling strategies from the 1950s to the present. Elaborating on and extending our experiences of nature, the films from the NHU provide a seasonal structuring to the schedules, with summer series on British wildlife and live broadcasts, Christmas and Easter specials; as well as focusing audience attention on the production of periodic media events, such as the blockbuster series. Within their scheduling as well as within their narratives, these programmes follow the seasons, the diurnal changes and life cycles, within simple and clearly defined ideas of ecological space, and appeal to "everyday standards of ritual politeness [which] locks the programme very firmly into the taken for granted world of neighbours and communities" (Silverstone, 1986a: 91). Natural history television not only provide the main source of public information about the natural world (MORI poll, quoted in Burgess, 1990b: 9), they also provide powerful reassurances of a 'natural' order of time, space, community and individual identity.

Natural history films also occupy an important position in a global market for wildlife films. As the name suggests, blue-chip films represent a safe investment of production time and money, with returns measured in domestic audiences figures which regularly exceed 10 million

and extensive overseas sales which underwrite up to two-thirds of their production costs. Natural history films are valuable, universalised, media products, sustaining domestic license fee restrictions at the BBC with income from abroad, and protected as commodities by what Murdock calls the "walls and ditches of copyright law" (Murdock, 1993: 529). The natural history programmes, images and sounds in the vaults of the Natural History Unit are an invaluable resource for reversioning, reselling and recycling animal images to fill the spaces in the proliferation of new broadcasting channels. Blue-chip natural history films form a pivotal point for the new networks of natural history film-making, which are centred on the Natural History Unit of the BBC.

In 1993 the Natural History Unit in Bristol was recognised as a centre of excellence for wildlife film-making within the BBC. The Unit has developed through its institutional associations and affiliations with scientists, film-makers and broadcasters to an organisation of around 170 people. The first formations of natural history film-making have solidified into a network that offers a global reach on nature, representing a relatively stable image of nature, persisting over time, and offering a blue-chip investment of broadcasting resources. The Head of the Department, Alastair Fothergill summarised these stabilities to me in the following way:

> "The BBC recognises us as centre of excellence, so that for both television, radio, and also indirectly through *BBC Wildlife Magazine*, we are a complete package. I think the reason that we have become a centre of excellence is a number of factors. We have been in it longer than anybody else, globally. [...] We have been making television programmes now for over 35 years, almost 40 years and there is no global competitor on that scale. [...] The BBC has remained very consistently supportive of wildlife programming. We also attract money. So of all the factual departments I think that we are very lucky from that point of view" (Alastair Fothergill, interview 16.6.95).

This stability is particularly surprising considering the huge changes in all parameters involved in natural history film-making over the last forty years. The practices of observational natural history have disappeared from contemporary biological science. Broadcasting has undergone changes which erode the educational commitment of the BBC, and have resulted in the disappearance of many scientific strands of programming. Moreover, the last forty years have witnessed immense transformations of nature itself, accompanied by a growing public awareness of environmental issues and changing attitudes to the rights of non-human animals. All of these changes could be expected to impact upon the consistency of natural history films, and suggest that maintaining these stabilities is an on-going and active process.

Not surprisingly, these stabilities are never fully achieved. Despite the successes of the NHU, the dissenting voices that were present in the 1950s still emerge periodically and the meaning and value of the films are still contested. In the extension of the medium of natural history film-making through time, over space and in size, a number of new issues have arisen. Throughout its history the NHU has faced the emergence of a series of tensions. There is a contradiction between the images of 'nature in the raw' that it presents, and the ethical issues

raised by the practices of film-making required to capture them. There are tensions between the popularity of their wonderful images of wilderness, alongside growing scientific concern and public awareness of global environmental change. The established success of the genre of blue-chip film-making constrains the perpetual search for media novelty. The NHU faces dilemmas as a national broadcaster in a global market for natural history films, which creates problems for representing British wildlife. Underpinning these is a more general tension between education and entertainment, given renewed focus in a broadcasting organisation that is a hybrid of a lingering public service ethos and new commercial concerns. The stability of the NHU is also undermined by external competition: the competition for audience attention and authority within an increasingly fragmented and contested cultural field; a battle for world rights over film material; the increased professionalisation and subsequent loss of control over the separate careers of the cameramen and the scientists; and lastly but not least, the emergence of the wildlife themselves as another scarce commodity. The size, longevity and global reach of the NHU may create enormous opportunities, but it also contains constraints.

This short history of wildlife film-making is a figure for many histories of contemporary cultural, environmental, and technological change. Natural history documentaries are a particular form of discourse, that includes the institutions in which they are produced. They are the product of, and contributory to, a specific matrix of media technology, scientific knowledge, image commodification and of a changing and active nature. They are necessarily hybrid. However, the images of nature which they present, with their representations of 'nature in the raw', erase this history and mystify their construction. I want to suggest that through exploring these contradictory histories in real geographical and social spaces, in workplaces, studios, research sites, wildlife reserves, and in living rooms, this research is able to make contributions to geographical debates on the discursive and material aspects of the relationship between nature and culture. The debates within geography over the boundaries between nature and culture, over who speaks for nature, how nature is represented, and the implications this has for acting upon nature, are dilemmas that are constantly negotiated by natural history film-makers themselves as they construct and maintain their worlds.

1.3. Cultural Geography and the 'Matter of Nature'

The relationship between culture and nature is, of course, of perennial interest to geography. In this section I outline research within cultural geography which examines nature as a negotiated social construct and a complex web of contested meanings, using this as a basis from which to explore the naturalised discourses of natural history films. This section focuses upon what 'nature' means, in an era that has seen epistemological forays into the presumed innocence of previous understandings of 'nature', and at a time when the commodification and technical exploitation of nature threaten the existence of many natural systems. It examines how

geographers have responded to the challenges of capturing this complexity, my immersion in this literature and the potential for extending this to the study of natural history films.

The long history of engagement in twentieth century geography with questions of the relationship between culture and nature, starts from the early pivot of the discipline around environmental determinism, through the Berkeley School of Cultural Geography and its concern for the morphology of the cultural landscape, to conceptions of the iconography of landscape in the last twenty years or so. I want to take up this narrative with the way that cultural geography, invigorated by cultural studies and literary theory has struggled to engage with both the discursive and non-discursive aspects of nature and landscapes. Work on the iconography of the landscape provides valuable insights into the power relations of production obscured by the study of material landscapes. Collections such as Cosgrove and Daniels (1988) have proved seminal texts on the hegemonic ideologies of aesthetic and disciplinary practices through which landscapes are mapped and depicted. A long and productive concentration upon landscapes, however, means that geographer's interests have only recently extended to examine meanings of nature constructed through the discourses of science, environmentalism, media and business; and to focus upon animals and plants within the landscape. With this shift there is a growing feeling that cultural geographers, although invigorated by the contextual histories of nature and textual metaphors of landscape, have failed to consider adequately the complex cultural politics of nature, and contemporary cultural geography is again immersed in a search for new ways of talking about nature (Demeritt, 1994a; Matless, 1996).

The growth of the environment as a political issue outside the academy, within geography and related disciplines through out the 1970s and 1980s renewed interest in nature and the environment, following a prolonged concentration upon the construction of space. Key early studies included historical work into changing attitudes to nature (Thomas, 1983); the philosophical and ideological background to environmentalism (Pepper, 1984); debates within radical geography on the concept of nature in Marxism (Schmidt, 1971; Burgess, 1978); and the production of nature, as well as space, through the processes of capitalism (Smith, 1984). In a notable article Margaret Fitzsimmons (1989) drew this work together, and looked to Marxist political economy and cultural materialism for the building blocks of a conceptual reintegration of nature into critical geographical enquiry around the idea of *social nature*: "the geographical and historical dialectic between societies and their material environments" (Fitzsimmons, 1989:106). Fitzsimmons gave an account of the reasons for geographers' "peculiar silence" on social nature, pointing to the institutional separation of human and physical geography; the ontological separation of nature and space in human geography and the urban bias of the intellectual influences and culture characterising critical geographical enquiry at that time.

Fitzsimmons' critique drew upon a social constructivist account of nature that was developing slowly outside geography, associated with critiques of modernity, and feminist engagements

with the nature of science (for example, Williams, 1973, 1980; Harding, 1986; Merchant, 1980; Olwig, 1980, 1984). Fitzsimmons effused these writings with work in geography on the production of space to conceive of nature as a 'concrete abstraction', asserting that nature could not be conceived of as outside of culture - conceptions of nature were produced and reproduced within social relations. Defining what is 'natural' is therefore seen as a historically and culturally contingent practice of boundary making between nature and culture, which is necessarily embedded within power relations. As Foucault suggested the cultural separation between nature and culture has implied no neutral relations between humans and the non-human world, but rather entailed detailed and persistent disciplinary practices (Foucault, 1980). These disciplinary processes construct boundaries that domesticate, mythologize, aestheticize, commodify, rationalize and gender nature. Moreover, the nature/culture opposition has informed diverse and culturally variable practices of domination and subordination on the part of humans. Taussig pointed out there is an almost universal tendency whereby any culture externalises its social categories onto nature, and then turns to nature in order to validate its social norms as natural (quoted in Katz and Kirby, 1991: 262). The mapping of these changing boundaries between nature and culture has been central to attempts to explore the mystification of nature and the natural, and I want to further expand these points by using the influential essays of Raymond Williams.

"Nature" was a key word for Williams, "perhaps the most complex word in the language" (Williams, 1976: 219). In the *Keywords* entry, and expanded in his essay "Ideas of Nature" Williams introduced an historical and cultural materialist approach to the understanding of society and nature; construing the social and environmental dialectically, as different faces of the same coin (Williams, 1976, 1980). Williams famously wrote that "the idea of nature contains, though often unnoticed an extraordinary amount of human history [...] 'nature' has a nominal continuity, over many centuries, but can be seen, in analysis, to be both complicated and changing, as other ideas and experiences change" (Williams, 1980: 67). To look at the different ways in which conceptions of nature are made and remade within culture, and to enquire into environmental histories, therefore provided Williams with a privileged and powerful way of accessing and understanding social and cultural changes. Conversely, or dialectically, social and cultural change cannot be understood without considering the embeddedness of social beings in the natural world. Raymond Williams was therefore acutely aware of strategies using representations of nature to suggest social values, asking: "Nature is - what? Red in tooth and claw; a ruthlessly competitive struggle for existence; an extraordinary interlocking system of mutual advantage; a paradigm of interdependence and co-operation" (Williams, 1980: 70).

The narrative that Raymond Williams offers for understanding the complex process through which 'nature' means narrowly "that which is non-human", is one of the objectification and contraction of boundaries around nature. Nature is constructed as separate from culture

through language, as process and practice. In Enlightenment thought, nature was transformed from a process to an inferiorised and homogenised sphere of dead, unconscious nature (Anderson, 1995: 277). Nature, thus constructed, can be commodified and sold, studied and experimented upon, planned and preserved. However, also during the Enlightenment period another related meaning of nature emerged, in which nature was simultaneously all that was not cultural, all that was authentic; and from within cultural conceptions of nature as resource, emerged the conceptions of nature as wilderness. The Romantic movement was marked by another way of seeing nature which, as Raymond William's suggested, introduces an important and still relevant tension between the utilitarian and the transcendental aspects contained within the concept of nature:

> "[I]n the idea of nature itself there was then a very curious result. The physical scientists and the improvers, though in different ways, had no doubt that they were working on nature, and it would be difficult to deny that this was so, taking any of the general meanings. Yet at just the first peak of this kind of activity another and now very popular meaning of nature emerged. Nature, in this new sense, was in another and different way all that was not man: all that was not touched by man, spoilt by man: nature as the lonely place, the wilderness" (Williams, 1980: 77).

These ideas still have enormous resonance. Raymond Williams criticised representations of nature and practices of culture built on an assumption of separation between domains of the natural and the cultural in the modern period, suggesting in a quote that is still pertinent: "The separation is a function of an increasing real interaction [...] if we go on with the singular abstractions, we are spared the effort of looking in any active way, at the whole complex of social and natural relationships which is at once our product and our activity" (1980: 85). Linking the material and ideal elements of nature with the possibility of social change he suggested that: "We need different ideas because we need different relationships" (Williams, 1980: 85). These tensions are also expressed within natural history film-making. Within wildlife programmes nature is made for us as fiction, as images of blue-chip natural history films offer a view of 'nature as the lonely place'. Yet natural history films also appeal to nature as 'fact', using scientific authority to uphold the neutrality of their images and the integrity of the animal behaviour they present. It is looking at the contributions of natural history films to the “whole complex of social and natural relationship [...] at once our produce and our activity” that I am interested in exploring.

This narrative, and the emergence of these tensions, form a central part of Fitzsimmons argument, however, it is not one that has subsequently been developed to explore the potency of images of nature in popular culture. Fitzsimmons reviewed a variety of work to incorporate aesthetic, ethical and economic issues in the concept *social nature*. In particular she cites the historical and primarily literary work of Kenneth Olwig (1984), the productionist approach of Neil Smith (1984) and a new critical attention to technological hazards (Hewitt, 1983). Within this work authors recognise that struggles over the meaning of nature are ideological, and

restrict the possibilities open to human beings and human societies. Yet despite the diversity and dynamic of each of the literatures that Fitzsimmons collected there seems no way of taking the central argument forward: how to theorise a locally grounded and meaningful, yet economically and historically specific nature. Her concept of social nature transposed arguments about the social construction of abstract space directly onto nature. This article remains a valuable contribution to on-going developments in the interpretation of nature-culture relations, but it has been critiqued for its inability to allow a full account to be taken of the social meanings of nature at any given time and place, and the danger of reducing nature simply to a matter of social relations (for example, Cloke et al, 1996). Subsequent work has argued that while nature cannot be (re)produced outside social relations, neither is it reducible to them (Whatmore and Boucher, 1993: 167).

This has raised new questions in geography about how to approach the material as well non-material processes through which ideas of nature are transformed. In order to try to recoup the efficacy of nature and transcend the questions of boundaries between nature and culture, geographers have increasingly looked to the work of Donna Haraway and Bruno Latour (Matless, 1996; Demeritt, 1994a). Haraway acknowledges the importance of challenging the ideology of nature, suggesting nature is "not a physical place to which one can go" (1992: 296), yet she nevertheless insists on its artifactuality, that is, a recognition that "nature for us is made, as both fiction and fact" (1992: 297). In the work of Latour and Haraway, this artifactual nature is conceived of as the relationship (the achievement) of many actors: human, non-human (organic and inorganic) and technological. In positioning natural history films within this matrix, this thesis therefore contributes to a new engagement between geography and science studies.

However, this thesis also draws upon work in geography on the contemporary cultural politics of nature. This focuses attention not only to the relationship between the discursive and non-discursive elements of nature, but also to the complex circulations of meanings of nature in the public sphere. The ability of actors other than academics to create and contest contemporary constructions of nature are important to transformations of meanings and the claim of institutions to represent nature (Burgess, 1990a; Burgess and Harrison, 1993; Harrison and Burgess, 1994; Kneale, 1995). This focus upon transformations of nature within the public sphere extends literatures upon representations of nature in film (Aitken and Zonn, 1993; Gandy, 1996), in order to explore the way claims made in the media remake nature, as well as space and time. As Harrison and Burgess suggests:

> "There is a pressing need to clarify how contemporary systems of communication contribute to ideas of nature in Late Modernity. The technological developments that have created and sustained the dominance of the mass media are undoubtedly contributing to fundamental changes in human consciousness and subjectivity. It would indeed be surprising if social constructions of nature were not also undergoing the same kinds of radical changes in

> meaning that are posited for experiences of time and space" (Harrison and Burgess, 1994: 291).

A recognition of the circulation of meanings of nature in the public sphere, and attempts to work between the human and the non-human have rejuvenated and expanded several strands in cultural geography. For example, geographers have begun to challenge some of the terrain of environmental historians, and explore the active participation of landscapes within cultural processes. Demeritt analysed the negotiations between models of silviculture, forest form and national identity (1996b), Proctor and Pincetl focused upon the position of suburban and wilderness habitats within contemporary biodiversity policy (1996), Cosgrove et al (1996) examined the connections between landscape type, landscape aesthetics and modern planning.

Another strand of work considers the mobilisation of nature at the level of genetic identity. Levidow analysed the recruitment of agricultural biotechnology within economic networks (1995), and Whatmore has explored the implications of the human genome project (1996). A third strand of new research has involved cultural geographers and social constructions of animals. Anderson (1995) for example, discusses the changing ways that animals are aestheticised and exhibited in the Adelaide Zoo. Philo (1995) has explored the historical mapping of the boundaries between culture and nature across other divisions of country and city; and the relationship between class, animals, landscapes and leisure is the focus of Matless' study of the Norfolk Broads (Matless, 1995). A special issue of *Society and Space* (Wolch and Emel, 1995) on the 'world of animals' reconnects animals back into geography, by retrieving past geographical debates, and placing them within contemporary economic, moral and cultural worlds.

Much of this work is oriented around the contested knowledge claims about nature, exploring how certain voices may speak for nature. Whatmore and Boucher (1993) for example have studied the claims of planners to speak for nature, and the procedures of environmental planning gain that allow bargaining for an 'improved' nature as part of development deals. Eden has explored the claims to environmental expertise of the business world, and the construction of business rationality as an environmental advocate (Eden, 1997). This focus upon the production of knowledge about nature, also brings renewed attention to contextual histories of the production of geographical knowledges (Matless, 1991; Livingstone, 1992). Fewer studies however, have attempted to hold both producers and consumers of environmental knowledge together in a single frame, and to explore the complex transformations that are currently taking place.

Burgess has examined the role of the mass media in the production and consumption of environmental meanings (1990a). Her subsequent ethnographic work on the negotiations between planners, committed conservationists and local people in the proposed development of Rainham Marshes, explores both the production and consumption of meanings of nature,

looking at social constructions of nature in different discursive contexts and the way particular representations of nature are used to legitimate specific policies and practices (for example, Harrison and Burgess, 1994). This work illustrates further some of the tensions which emerge not only within different conceptions of nature, but also between different moments in the circulations of meanings, as images of the natural are produced and consumed. Burgess and Harrison's work contributes fascinating accounts as different groups of people grapple with ideas of nature to negotiate media representations, scientific expertise, and their attachments to place and landscape (see for example, Burgess, 1990a; Burgess, Harrison and Maitney, 1993; Harrison and Burgess, 1994) The basis of these negotiations shift as dominant media discourses of nature embrace crisis and global catastrophe, or move back to focus upon the local, radically altering conceptions of time and space.

Within the sphere of production there are also differences. The rapid development of claim and counter claim in the press and television news (Harrison and Burgess, 1994), contrast starkly with the relaxed reflections articulated by David Attenborough in 1984 (Burgess and Unwin, 1984). In an interview with Burgess and Unwin David Attenborough talks about his motivations as a film-maker as "pleasure, only pleasure". These are the pleasures of "defining man's relationship with the natural world - making sense of it [...] it brings great pleasure" (Burgess and Unwin, 1984: 102). David Attenborough does not question the certainty and authority of these definitions from the producer's position. Nor does he anticipate the complex way in which they will be interpreted by consumers. The natural history film-maker seems to be able to stand outside of the rapid transformations in meanings about nature, in order to legitimate such universal sentiments. However, David Attenborough, does offer a limited account of the 'white lies of film-making' which are necessary to accomplish the production of documentary statements like *Life on Earth* or *The Living Planet*. He explains:

> "There is precious little that is natural [...] in any film. You distort speed if you want to show things like plants growing, or look in detail at the way an animal moves. You distort light levels. You distort distribution, in the sense that you see dozens of different species in a jungle within a few minutes, so that the places seem to be teeming with life. You distort size by using close-up lenses. And you distort sound. What the film-maker is trying to do is to convey a particular experience [...] The viewer has to trust in the good faith of the film-maker." (David Attenborough, quoted in Burgess and Unwin, 1984: 103).

The importance of trust, the experiences and good faith of the film-makers are all elements which change and can be challenged. The technologies available to achieve these distortions develop and with them the stories that can be told. The pleasures to which they aspire, and the definitions which they offer are not 'natural' for there is "precious little that is natural in any film". Natural History films are not immune to these circulations of meanings, despite their achieved stabilities. The relationships between the many producers and consumers of natural history films have necessarily shifted historically, even if the images remain relatively fixed. Natural history films not only take a place in defining the relationships between nature and

culture, but also in the circulation of meanings in the public sphere. It is a complex history, yet it is not one that has been told.

1.4. Reviewing Natural History Films

The academically hybrid form of natural history films, and their cultural authority mean that there are few histories of natural history film-making. Natural history films are credited with a minor role in the development of documentary traditions in Britain. The blockbusters from the Natural History Unit take their place amongst classic and authoritative series that offered historical, cultural and ecological accounts of the world, marking a period of broadcasting affluence and cultural confidence. *Life on Earth* (1979) is recorded as the most popular documentary series of all time, and credited by Barnouw as "one of television's most awesome achievements" (Barnouw, 1983: 297). Taking his place amongst the personalities of Kenneth Clark's *Civilisation* (1969), and Jacob Bronowski's *Ascent of Man* (1974), David Attenborough's *Life on Earth* secured his place in broadcasting history, and still broadcasting into his 70s, he remains one of Britain's longest serving and most familiar faces on television. However, the genre of natural history television remains relatively isolated from the main arenas of the research on the development documentary television in Britain (Barnouw, 1983; Corner, 1986).

The place of films in the processes of the development and communication of science are just beginning to be explored, with Mitman (1993) looking at the early cinematic nature films and the American Natural History Museum, examining the historical intersection of film as a technology of communication intended primarily for entertainment and film as a laboratory technology designed for scientific research (Mitman, 1993). Science on television in general, and natural history films in particular have been used as vehicles for exploring the ideologies of science. Work by Gardner and Young, (1981), Young (1992) and Crowther (1995) explore the universalist discourses of the science and their communication in the media, evident through a variety of narrative strategies that reify knowledge and construct difference and gender identity. I want to return to some of this work later in the thesis for they provide key insights into moments of television science, however, there is nothing that draws together the historical and theoretical imbrications between science, the media and the cultural politics of nature within natural history film-making.

Natural history films do merit passing mention in a growing number of accounts of the development of the environmental movement, but the relationships between science, the media and environmentalism are largely unexplored. The processes of popularising science are unexamined by authors reluctant to look at the constructions of media, let along the constructions of science. For example, Max Nicholson does recognise a role played by the media in contributing to the policy changes in nature conservation he has overseen. However,

from his perspective the processes of the media are self evident, spontaneous and not worthy of examination. This is despite what he identifies as the:

> "excellent performance of the media, led by television, film and radio. These have, to their own surprise, found endless attractive material that can hold worthwhile and sometimes even very large audiences, week after week. While, in principle, the media deserve to be treated as one of the major partner interests of the environmental movement, their role needs no further discussion here as the process of transferring material from the field to the screen, the microphone, the periodical or newspaper, the disc, the exhibition or the museum occurs spontaneously, without calling for any remote or high level negotiations or bargaining" (Nicholson, 1987: 126).

The new sources and stories associated with the environmental movement do receive attention within media research, and there is a substantial body of literature charting the engagement between the environment and the press in the late 1980s (see for example, Hansen, 1993; Anderson, 1993, 1997; Burgess, 1990a). On the broad scale of the post war period, however, the media and certainly television, are marginalised in a series of histories that focus more upon the elite discourses within institutions rather than on their popular corollaries (for example Nicholson, 1987; Bramwell, 1989; Pepper, 1996).

The opportunities which natural history films *could* offer to the environmental movement form a strong strand of many popular articles on natural history film-making, and a sparse, diverse academic literature. The hopes of film-makers and conservationists for an informed exchange between environmentalists, television producers and audiences are explored through a variety of methodologies with the consumers and producers of natural history films, mainly in the mid to late 1980s. Drawing on a content analysis of films from 1983- 1985 Newson (1987) looked at whether natural history had met the challenge of the conservation movement. Kellert et al (1985) carried out quantitative research of attitudes to conservation amongst natural history film audiences in the United States; and McMillan (1988) looked at the opportunities of the new environmental television and the role of television in the conservation movement in Britain. At their time of writing all had positive conclusions about the existence, acceptability, and even the effect of conservation in natural history films. McMillan concluded that: "Environmental television does appear to be reaching a broad audience and with better communication and co-operation and a few changes, the important role of environmental televisions will be realised" (1987: 66). However, writing at the very end of the 1980s period Stephen Mills communicates a feeling of missed opportunities and misplaced optimism (Mills, 1989). He suggests that the natural history films which are credited with raising popular concern about environmental issues actually encourage complacency with their images of a world still "bristling with animals" (Mills, 1989: 6). Mill's article again raises the question of how natural history films are involved in the processes of (re)making nature, as separate from culture, in the public sphere. In a piece written in the *Times Literary Supplement* in 1997, he is more despondent about this issue, suggesting that a natural history film-maker "makes his living

out of nature; nature is disappearing. If he says too much about that, he loses his audience. If he does not he loses his subject" (Mills, 1997: 6).

Roger Silverstone, writing on natural history films in 1986, raises a number of pertinent and still unanswered questions about how natural history are involved in these boundary making practices and the construction of modern myths. He suggests that in order to examine how wildlife films maintain the divisions between nature and culture, we can move in two directions (Silverstone, 1986a: 90). We can move closer, to look at the narratives of natural history films exploring how the films overcome the contradictory definitions of the world provided by science and television through rhetorics, forms of expression and knowledge claims. We can also move further away to raise questions of ideology and knowledge, asking who it is that has the "power to define a relationship to a particular subject in a particular way - a relationship which [...] may not have the neutral quality claimed for it" (Silverstone, 1986a: 90).

Through this perspective we can explore the nature of these boundary-making practices; opening up the spaces within natural history film-making, recounting its own history and exploring its changing context. For as Silverstone suggests, natural history:

> "does not speak of its own history; that natural history is itself a human product. Our relationship to nature is continually changing. That relationship is not natural, rather it is exceedingly complex and contradictory" (Silverstone, 1986a: 90).

These challenges were taken up by Alexander Wilson in his synthesis of the different cultural constructions of nature evident through tourism, nature education, theme parks and nature history films in Canada and the USA. In *The Culture of Nature* he explored the politics, economics and aesthetics of North American natural history film-making, concluding his chapter on 'Looking at the non-human' by suggesting that natural history films could provide access to understanding the ways nature is represented in the popular sphere, and also how this relates to modern configurations of nature and culture. He suggested that:

> "Wildlife movies are documents of a culture trying to come to terms with what Bill McKibbern calls 'the end of nature'. Their short history is one of intricately overlain traditions: animal fables, technological fetishism, dissident science, sea and adventure stories, and conservationism. Nature is alternately (and sometimes simultaneously) understood as refuge, community, and commodity.
>
> "The history of these movies is thus a figure for many histories [...] cultural, biogeographical, environmentalist, and technological. They have moved [...] as the land and its meanings have changed. The movies have both anticipated and responded to the ideas of the environmental movement, and their televised images have helped to organize the way we experience the natural world. Here and there they demonstrate the possibility of entering into social relations with the world" (Wilson, 1992: 155).

Understanding natural history films as documents of a culture trying to come to terms with the death of nature, and positioning natural history films as a figure in other cultural, technological and environmental histories - this is the daunting venture that Wilson presents. Whilst his rich

cultural synthesis does not explicitly address these issues in theoretical terms, I would suggest his comments place natural history films in a way that opens up dialogue with academic debates on the origins, trajectory and transformations of modernity. These debates chart the unfolding processes and contradictions of industrial capitalism, focusing on the complex relations between power, knowledge and social practices within real substantial geographical and social spaces. These are evident in Bill McKibbern's *End of Nature* (1990), calling attention to what it is now meant by the word 'natural', when the anthropogenic emissions of industrial capitalism have the potential to alter global climates. Debates about modernity are illustrated by the struggles over the meaning of local landscapes with the global representations of the media and science, as environmentalism seeks to redefine these in terms of the nature that we want. An engagement with a problematic modernity is evident in the juxtaposition and competition of stories about nature. And they are also evident in the discussions over expertise, over who is qualified to talk about nature, and the questions of how to enter into a more social relationship with the world. As Wilson elaborates:

> "Today nature is filmed, pictured, written and talked about everywhere. As the millennium approaches, those images and discussions are increasingly phrased in terms of crisis and catastrophe. But the current crisis is not only out there in the environment; it is also a crisis of culture. It suffuses our households, our conversations, our economies. To speak uncritically of nature is to ignore these social questions" (Wilson, 1992: 12).

1.5. Natural History Films and the Nature of Modernity

I want to suggest we can trace within the early configurations of natural history film-making some threads of the institutional and informational axis of modernity. This is evident, for example, in the technological developments within the Arriflex factory; in the avant-gardism and confidence in elite culture enthusing public service broadcasting values at the BBC, the leadership of Max Nicholson and the shamanism of Joseph Beuys; and it is evident in the confidence of Konrad Lorenz in the pursuit of science for peaceful means after the second world war. The development of the Natural History Unit, through the globalisation of its representations of nature within the series *Life on Earth*, resonates strongly with the institutional trajectories of modernity. However, in bringing this narrative up to date and revealing the tensions, gaps and discontinuities, it is necessary to look at the way that recent debates have engaged with a crisis in modernity. Much of the literature on modernity has been written within the last ten years, in dialogue with the developments of high modernity or the uncertainties of post-modernity, suggesting a sense of change or acceleration in the formations of modernity.

The rhetoric of post-modernity appeals to a widespread sense of fragmentation and the disruption of establishment institutions, an increasingly contested and commodified cultural sphere and a growing scepticism of expertise which leads some to claim a new politics of relativism and a crisis of representation (Lyotard, 1984). The many narratives of post-

modernity have looked at nature as spectacle and on the shifting signification of reality as a reflection of empowered discourses that have constructed nature as "other". This analysis tends to stress the symbolic elements of nature, yet over look its materiality. This can be a valuable counter to the tendencies of naturalism, making appeals to an autonomous nature for the policing of culture, but for the most part within these narratives any agency of nature disappears. The favoured settings for these accounts are the nature parks or the theme parks of urban America, constructed as the last battle grounds of nature versus society, with the simulacra of wild nature represented by corporate culture. As Dean Macanell puts it in his short piece on 'Nature Incorporated': "This is a pseudo-battle. Its outcome is rigged. It is not nature vs society but 'framed' nature vs corporate society. Society already won. The 'battle' is only another entertainment" (Macanell, 1992, 117). Even in more nuanced and indeed materialist accounts dealing with the discourses of post-modernity, the absence of a consideration of nature is striking (for example, Harvey, 1989).

However, for others it is precisely the return of a marginalised, yet empowered, nature that distinguishes the late modern period from previous configurations. Beck, for example positions this new period as one in which the contradictions of science and nature internalised within the institutions of modernity, emerge in new and powerful ways (for example, Beck, 1992). In his analysis of late modernity, Beck focuses upon a nature that is the subject in the laboratory, a nature of resource exploitation. He discusses the way that elements of nature have been incorporated into the processes, technologies and institutions of late capitalism, rather than ways that nature has been visually constructed through the theme park or zoo. For Beck at least, it is an empowered nature. The period of late modernity, or Risk Society, marks a period where "since the middle of this century the social institutions of industrial society have been confronted with the historically unprecedented possibility of the destruction through decision making of all life on this planet" (Beck, 1992: 101). Representations of nature in the media are again central to these configurations of modernity. Yet this time, their power is not symbolic of the triumph of culture over nature, but rather in making visible the re-emergence of the threats of natural processes to culture, and the power that this might have for changing our relationships. Beck suggests that "Culture sees in symbols" and that the "images in the news of skeletal tress or of dying seals have opened people's eyes. Making the threats publicly visible and arousing attention in detail [citizens] can perhaps win back the autonomy of their own judgement" (Beck, 1992: 119). However, his faith in the power of the media is not reflected in an analysis of their functioning. Moreover, five years later, with environmental reporting having exhausted its immediate news values, questions have to be reframed to ask whether the public invisibility of the consequences of environmental change have had the effect of shutting people's eyes once again.

I believe there is a crudity to accounts, such as those by Beck, or Macanell, which hampers their application for working through an understanding of the historical and contemporary

imbrications between the media, science and nature. In fact they actually reproduce the singular abstractions of nature and science which such an understanding hopes to overcome. I therefore want to use work within science studies to employ a vocabulary which recognises the importance of hybrid forms, giving recognition to the complex mixing of nature and culture, whilst also acknowledging the tendency of expert systems to present purified versions of these forms. From this perspective a more complex history of the changing post-war relationship with nature emerges, one which is able to incorporate the perspectives of many different actors as they form and negotiate these relationships. I wish to use the stories of natural history film-making from the Natural History Unit, as a way of exploring the different voices, representations and the practices of natural history film-making, and revealing the tensions and ambivalences through which nature is produced as both fact and fiction. Following, Latour I would assert that we have never been modern. The distinctions and purifications characterising academic accounts of modernity, and evident within natural history films, were never achieved; and alongside the purifying practices of modernity, there exists another seemingly contradictory practice: the construction of systems that mix politics, science, technology, and nature (Latour, 1993). I would assert that it is precisely the power of stories to reconnect these strands.

1.6. The Aims and Scopes of the Thesis

This first chapter has positioned natural history film-making as an important, yet neglected, contributor to the many stories that we tell about what nature is, what nature means, and how nature should be. I have used the enduring duality between nature and culture (nature defined in opposition to culture) as the basis for beginning this study into natural history film-making. Firstly, I introduced the way natural history films themselves contribute to this persistent separation between nature and culture. Secondly, I explored how geographers have studied the boundary between nature and culture as a way of understanding who is privileged to speak for nature, how this is achieved, and with what effect. Thirdly, in the search for a theoretical framework for studying natural history films, this chapter has briefly introduced contemporary literature on modernity, as a realm of 'high theory' where the Enlightenment dualities of nature and culture still hold analytical authority.

I want to conclude the Introduction by suggesting that understanding the contribution of natural history films to changing British attitudes to nature does requires working *with* this duality - in order to explore how natural history films have worked to maintain the boundaries between nature and culture. However, I have also indicated that there are other positions from which to study natural history films, notably derived from the work of Latour (1993). I want to suggest that understanding the significance of natural history film-making also requires working *between* this duality. The processes of natural history film-making not only provide images of 'nature in the raw' which reinforce a vision of nature as wilderness, they simultaneously weave together flows of materials, knowledges and practices, creating new communication

geographies and hybrid forms between categories traditionally considered as either natural or cultural. In this last section of the introduction I want to say more about the aims and scope of the thesis, introducing my intention to focus upon the processes through which these hybrids are formed, rather than upon the purified images that result. I return briefly to the particularities of the BBC's Natural History Unit which lend themselves to this form of analysis. Finally, I introduce the means of telling and evaluating this rich history.

This thesis presents a narrative of how a way of approaching and representing nature, forged in the cultural, technological and scientific context of post-war Britain and Germany, has been able to achieve the status of a universal representation of nature, dominating Western media for the last forty years. Rather than focusing on how the individual texts of wildlife films communicate meaning, I argue in the theoretical chapters, and demonstrate in the empirical analysis, that through certain social and spatial practices programmes from the Natural History Unit are able to colonise space for the popular presentations of animals on television. The thesis contributes conceptual insights to debates in Cultural Geography on the geographies of knowledge, and their relation to meanings and materials of nature, through my engagement with theoretical ideas about nature and modernity and informed by my empirical work with natural history film-makers. The narrative in the thesis is also told with the aim of revealing new ways of understanding the politics of natural history film-making. Whereas textual analyses offer scope for identifying power relations in the construction of representations, they tend to restrict discussions of alternatives to textual strategies. By recovering a complex history and geography of natural history film-making I hope to recover more points from which to understand and intervene in the processes of constructing knowledges about nature.

This analysis has been carried out through the heuristics of actor network theory, which I want to introduce in Chapter 2. Starting with a review of work on science communication and the media, the following chapter introduces and extends some of the work of Latour and others, to position natural history documentaries as nodal points in modern networks through which knowledge about nature is constructed. Actor network theory has developed out of a concern with the processes through which knowledges, particularly scientific knowledges, are constructed; exploring the situated practices and representations through which science claims to speak for nature, and the ability of the discourses of science to command power over space. This work offers a way of understanding natural history films which challenges the universality of the images they present, through the study of the local situations in which knowledges about nature are constructed, and the processes and associations which enable these situated understandings to gain power over space through the media. The universalised knowledges within natural history films emerge as the achievement of associations between various actors such as cameramen, commissioners, co-producers, technologies, animals and environments.

Chapter 3 introduces the methodology for this study. The methodological discussions build on the literature of actor network theory to outline some of the theoretical and methodological issues involved in capturing and making sense of this complicated history. In Chapter 3 I provide some practical responses to the theoretical claims of actor network theory, and introduce the scope and voices in the contested narrative of the Natural History Unit in the empirical chapters. The aims of this study and the approaches of actor network theory mean that the thesis tells a very particular history of natural history film-making. The stories recounted in the thesis are the ones told, negotiated and mobilised by natural history film-makers themselves. This differs from the traditional academic perspectives which assume academic commentators can construct critiques from outside these actor networks. Instead the analysis follows more closely what Law calls a 'modest sociology' (Law, 1994); rejecting explanations of the actions of others through existing analytical categories, and seeking instead to follow the way that the actors themselves construct their own realities, from the personal, technological and institutional resources available to them. These more located orderings offer the opportunity to both critique and enrich the overarching accounts of modernity I have introduced in the chapter. I will return to the achievements and limitations of this approach in the methodology and in concluding the thesis, however, here I want to suggest that this approach is particularly relevant to the study of the Natural History Unit.

The Natural History Unit is unusual within media organisations and scientific institutions for it is a place where people predominantly learn from each other. This gives the close emphasis to the case study required by actor network theory particular prescience. Within the BBC, the Natural History Unit has developed remote from administrative and arts centres in London, focusing on the specialised contacts, knowledges and techniques for researching, filming and editing films about animals. The NHU is the only part of the BBC to specialise in wildlife film-making, which means there are few other places to learn or apply these skills. Other parts of the media tend to form part of a recognised career path, with people, skills and ideas continually circulating; moving from children's television, to light entertainment, to drama; or from news, to documentary, to travel. However, once people enter the Natural History Unit they have tended to stay there. Only more recently have they had opportunities to form independent companies and these still usually seek to broadcast on the BBC.

The empirical chapters of the thesis present the history of natural history programmes at the BBC, as told to me by the film-makers through interviews, archives and participant observation. It is an important perspective for film-makers themselves, for it charts a process of acculturation and the gradual accumulation of resources, skills and contacts which members of the Unit negotiate in order to produce natural history films. This history outlines the archives, programmes, contacts and technologies and people from which the members of the Unit have learnt. As one of my interviewees suggested:

> "We have got this, how can I put it, congested condition. We've got people most of whom don't want to move on, most of who have a zoological background. Although one or two people have come in from outside, mostly its within the same melting pot of people, so you are always learning from natural history folks, which is what I've done" (Anthony, interview, 3.8.95).

However, this history also has powerful effects throughout extended networks of people and things which have allowed these knowledges of nature to be constructed at a distance. The achievement of programmes like *Life on Earth* made by the 80 or so people then in the Unit, filmed in over 100 location areas and seen by more than 500 million people in over 100 countries (NHU publicity brochure, 1990) demonstrate that these situated knowledges have a huge scope. The thesis provides an account of the links through which these situated knowledges are able to achieve their power over space, following the accounts of the film-makers themselves as they forge links between animals, audiences, scientific expertise, film-making innovations and broadcasting initiatives. The located orderings of nature within the Natural History Unit are recursive processes, which are able to act at a distance through reconfiguring space.

The first empirical chapter, Chapter 4, explores the early history of the Natural History Unit, outlining experiments in natural history film-making which emerged from associations between broadcasters at the BBC and scientists in zoological institutes and natural history organisations. The early films provided the first formations for the Natural History Unit which was established in 1957, and incorporated this scientific model of natural history film-making. Chapter 5 looks at the expansion of these first networks over time and space, as the Natural History Unit enters the period of the 'blockbuster series' of *Life on Earth*. This expansion is accompanied by an increasing professionalisation in the practices of filming-making, changing relationships to academic ethologists, and the globalisation of a growing market for wildlife films. Chapters 6 and 7 explore a series of challenges and tensions within the achievement of these global networks of natural history film-making. Chapter 6 focuses on the ethical and environmental responsibilities of natural history film-making as the Natural History Unit attempts to stabilise its associations through a period of growing public awareness of environmental change, and industry discussions over the ethical implications of increasing drives for dramatic images of nature. Chapter 7 brings this story up to date as the distribution of power within the networks shift again, with control of the BBC increasingly centralised in London, and further challenges emerge from operating in an increasingly multi-media environment. This historical narrative demonstrates how the associations developed around the Natural History Unit have laid in place a set of structures and developed a set of resources and staff expertise which support the genre of blue-chip natural history film-making.

The final empirical chapter moves attention away from the history of the Unit, to look at the contingencies of these processes in action within a period of decision making at the Natural History Unit. Chapter 8 follows the progress of individuals and programme ideas through the

editorial process of 1995, to open up one point within this network, and explore how the debates around natural history film-making are negotiated by people within the Unit. The final chapter of the thesis introduces conclusions reflecting on the hybrid forms and complex history of natural history films. The conclusions summarise and evaluate the use of actor network theory for reconstructing these stories of natural history film-making. I explore significant points from the previous narrative to consider their ability to open up conversations with other disciplines, and to outline more sustainable ways of intervening in the many discourses of natural history. Despite the success of the Natural History Unit over the last forty years I have suggested that the stabilities of Natural History film-making are never achieved, and in the conclusions I want to argue that there are many points of negotiation and further avenues of research through which to open up discussions over the future of nature.

II
Television, Science and Television Science

> "Both television and science, and indeed television science are involved in an endless process of defining and classifying, I might call it framing, which takes place as a necessary part of the processes of *doing* science, or *doing* television. Each has its own rules of procedure, its own rules for the definition and presentation of knowledge, its own rules for the construction of its authority to speak about the world and to claim an audience who will understand" (Silverstone, 1986a: 91, original emphasis).

2.1. Part I: "Doing Television"

2.1.1. An Introduction to Two Cultures

Both science and documentary television claim to tell the truth. Natural history programmes on television and the natural history disciplines of science are both involved in an "endless process of defining and classifying" the natural world. Most work upon the place of science in popular culture has been premised upon a distinct divide between two separate cultures and two distinct processes as scientific research and television production define and present knowledge. For example, in work on the public understanding of science, the dominant view of the popularisation has rested on a two stage model: firstly, scientists develop knowledge; secondly, popularisers spread streamlined versions of this knowledge to the public (Bodmer, 1985; Durant et al, 1989; Hilgartner, 1990). The processes of generating knowledge are perceived as purely concerned with natural phenomena; whilst popularisation is a practice concerned with cultural production. Similarly, work on the presentation of science in the media has focused upon the competing discourses of television and science through which this processes of framing are undertaken.

In this chapter I want to explore the distinctive claims of both science and the media to speak for nature. Documentary television and science embed their representations within different narratives, constructed for different purposes and for audiences which are not only differently constituted, but also constantly shifting. Television science shares many textual characteristics with fiction television, achieving its naturalised status as truth through the cultural command of its many mythic and mimetic narrative structures. However, in this chapter I also want to draw attention to the similarities between how science and documentary television define and present knowledge. Science and television increasingly share complementary contexts, involve many of the same social, technical and natural actors, and share a mutual dependence upon realist aesthetics and positivistic attitudes through which vision is associated with truth. The representations of science and television both claim authority to speak for others in distant times and places. This is achieved through the integrity of their images and their methods of inscribing reality, as well the plausibility of their narratives, credibility of their institutions and trust of their audiences. There are therefore correspondences between the practices of

documentary television and science in claiming to tell the truth about nature, as well as important differences in the means in which they achieve these ends.

These similarities and differences are discussed within the three parts of this chapter. Firstly, I introduce work on television science which has explored these tensions in powerful deconstructions of the narratives and rhetorics of television science, but has tended to leave science as a category unexamined. Secondly, I move to the realm of science studies, and the work of Latour in particular, to explore the claims of science to represent reality, and to introduce a more symmetrical and broader treatment of the representations, practices and narratives of television and science. Thirdly, I speculate on the potential for combining these insights to look at specific questions around natural history film-making. This chapter introduces a series of tensions between the visual and narrative, nature and culture, local and global, material and discursive, subject and object within the processes of *doing* television science. It is not my intention to resolve or transcend these dualities from a theoretical position, for these tensions are the subject of constant negotiation between the many actors involved in these processes of doing television science. The aim of the chapter instead is to position these ambiguities within a framework which the methodology and empirical chapters can draw upon to move between these theoretical tensions and the way that they are actively negotiated and performed by natural history film-makers themselves. This is perhaps a modest aim, but the absences in the literature are large. As Cooter and Pumfrey conclude:

> "Surprisingly little has been written on science generally in popular culture, past or present. Still shrouded in obscurity are the effects of even the most obvious mechanisms for the transmission of scientific knowledge and culture: the popular press, radio and television, to say nothing of science texts, museums, school curricula, and the overtly propagandist productions of the science lobby itself. From coffee houses to comic books and chemistry sets, from pulpits to pubs and picture palaces, from amateur clubs to advertising companies, from Science Parks to Jurassic Park, our ignorance both of the low drama and the high art of science's diffusions and modes of popular production and reproduction is staggering" (Cooter and Pumfrey, 1994: 237).

2.1.2. Media Studies and the Communication of Science

Within the huge literature of media and cultural studies, there is an emerging research agenda which recognises the importance of science, nature and environmentalism within the media. The beginning of this engagement has focused on existing theoretical and empirical questions within media studies over agenda setting, source media relations and the news values of environmental and scientific issues (Lowe and Morrison, 1984; Friedman et al, 1986; Burgess, 1990a; Hansen, 1993; Anderson, 1997). Focusing upon the environment leads researchers to pose, with unusual sharpness, questions over the roles and discourses of official "experts" in a society increasingly typified by its dependence on the advice and administrative practices of various technological and scientific bureaucracies (Corner and Schlesinger, 1991: 435). The proliferation of claims on the environment has provided new challenges for media practitioners,

negotiating the shifting institutional basis of scientific and environmental expertise, and translating scientific material into media forms (Anderson, 1993; Szerszynski, 1991). Understanding the relationships between science, technology and the media are also seen as central to the construction of a viable public sphere (Schlesinger and Silverstone, 1995). This work from media and cultural studies has therefore addressed many important questions on the cultural construction of the voices of authority embodied in texts and institutions, the positions of audiences and the processes of scientific citizenship.

Media and cultural studies are, however, less prepared to handle those questions of science, nature and the environment which, while culturally constructed, are not reducible to discourse: questions of the earth, the water, the weather, the non-human, the biosphere, of historical presence and of social totality. A special edition of *Cultural Studies* on the environment opens with just these issues: "What of the apprehension of these, not just via concept, but - in addition - via the affect? How do we speak of that which is not reducible to the mode in which we speak - both acknowledging the mode in which we speak and that which asserts itself apart from having a voice?" (Berland and Slack, 1994: 2). Addressing these questions requires a movement away from contemporary media centrism, and a search for new ways of positioning the media within a nexus that includes not only culture, but also nature. It also raises anew questions of media agency: questions over whether television does 'effect'. As Corner and Schlesinger suggest: "that reductive but inescapable conundrum, 'reflection or construction?' once again has to be engaged with" (1991: 436). Moreover, it raises questions over what and where are the potential points of intervention for exploring or reconfiguring our relationship to a social and technical nature.

These issues are particularly pertinent to the texts of documentary programmes and to television as a broadcast medium. Their claims to reality, institutional nexus and domestic setting mean that television programmes are amongst the most important purveyors of popular science (Burgess, 1990b). However, these questions have to be understood within a rapidly changing media environment and media studies agenda. A rich documentary tradition has evolved in Britain within the institutional structures of the BBC and ITV, both of which accepted the responsibility to provide information as well as entertainment. This is an "unwritten history that has gained importance now that the future appears so uncertain, and those supportive structures are less secure" (Holland, 1994: 40). The last ten years have seen a steady erosion of the classic documentary form. Yet at the same time factual programmes have had an unexpected explosion; often overlapping genres to mix fact and fiction in formats like video diaries, reconstructions, real life dramas and dramatic documentaries.

Media studies have struggled to keep up and documentary studies have been marginalised for the best part of twenty years. Documentary television, with its claims to reference an external reality has been side-stepped by post-modern readings of television with their merging of

representation and reality in the hyper-real. The last significant output of books on documentary forms appeared in the mid 1970s, when works by authors such as Barnouw (1974) and Barsam (1974) marked the era of observational documentary with a lasting aftertaste of documentary studies supposedly irredeemable and naive obsession with realist representation.

> "Against the almost terminal problematization of the very idea of 'representation' coming from vangardist anti-realism and the - again, almost terminal - problematization of the very idea of reality more recently issuing from postmodernist commentary, documentary looked a bit beside the point" (Corner, 1993: 414).

The number of sustained forays into this field is still limited and fragmented, though much has been done to prevent stagnation, notably by the work by Corner (1992, 1993), Silverstone (1983, 1984, 1985, 1986b), and periodic writings of critic and film-maker Dai Vaughan (1976, 1986). After a long period at the margins of media studies, the study of documentary forms are now redeveloping momentum (Renov, 1993; Nichols, 1991).

2.1.3. The Narratives of Television Science

There is a small, but significant, literature that examines the relationship between science and television. There are a handful of ethnographic accounts of the production processes through which media personnel work within the constraints of their medium to produce scientific or environmental programmes. Silverstone (1985) has examined the search for stories and action on the Green Revolution by BBC's *Horizon*, and Hart (1988) has followed the production of an episode of the Independent Television production *Real World*. Silverstone has developed a semiotic reading of the constructed nature of the audio-visual texts of science on television (Silverstone, 1983, 1984, 1985, 1986b), and Gardner and Young (1981) have reviewed the representations and production strategies of a range of television science programmes from the late 1970s. The accounts that film-makers give of their own practices involve a series of taken-for-granted qualities, articulated through discussions such as the 'strength' of a shot, sequence or programme. Silverstone's approach presents a demystification and analysis of these largely unconscious rules and conventions, and the way that they construct textual meanings. Audience interpretations show how meanings are subsequently made from the texts of television science, and have focused upon the active and differentiated processes through which audiences negotiate between the way they are positioned within the text, their experiences, and their wider interpretation of the civic consciousness of the text (Corner et al, 1990; Silverstone, 1985).

Taken together these writers provide a fascinating picture of the production, texts and consumption of a series of largely mainstream science documentaries transmitted in the late 1980s. The programmes are positioned in the emergence of media interest around issues such as the environment, nuclear energy and genetic modification; and the analyses of Silverstone (1985, 1986b), Corner et al (1990) and Gardner and Young (1981) explore how these issues are

framed by the media and how scientific expertise is granted authority to speak for them within television texts. Despite the continued growth of both media and cultural studies, and the development of new disciplines like the Public Understanding of Science, there is little work on television science more recent than this. There is a growing body of work on the mass media and environmental issues (for example Hansen, 1993; Anderson, 1997), but this too has steered clear of television in its concentration upon journalism (although see Burgess (1987) for a discussion of landscapes on television). The body of work on television science therefore forms the starting point for my discussion of the relationships between science and television.

Much of the work on television science is framed in terms of the competing discourses of science and television. The discourses and narratives of everyday life which television both claims and contributes to are grounded in experience and custom. Such discourses are seen as incompatible with those of science, whose narratives are prescriptive and do not generate communality (Silverstone, 1986b). More specifically, contrasts are drawn between science as a literary medium and television as an oral medium; between a film-maker's responsibility to subject and audience; and the apparent conflict between education and entertainment (Silverstone, 1986a: 89). Accounts of television's attempts to reconcile these competing discourses within its own signifying system invariably give primacy to the language of television. As Aubrey Singer, the creator of BBC television's *Tomorrow's World*, puts it: "The televising of science is a process of television, subject to the principles of programme structure and the demands of dramatic form. Therefore, in taking programme decisions, priority must be given to the medium, rather than to scientific pedantry" (quoted in Silverstone, 1985: 60).

One consequence is that television science tends to present science as unambiguous knowledge, foregrounding instead the factual discoveries and technical revolutions to which it can claim (Collins, 1987). Gardner and Young suggest the dominant characteristic of television science is that it

> "separates the substance of knowledge and technology from the processes of origination and prioritisation which would make explicit the values involved [...] The means of production, the setting of research agendas, and the social relations of production and application of scientific knowledge all embody particular positions about the development of society, yet these are rarely examined" (Gardener and Young, 1981: 173).

The reasons for this mode of presentation of science are diverse. Scientific institutions command privileged access to the media on certain issues by virtue of their claims to expert knowledge and their position in society. These powerful sources are over-accessed to become primary definers of the scientific content of the media; the practices of science remaining invisible within their institutional operations. This is despite, or even because of attempts at media neutrality, as Stuart Hall suggests:

> "Media statements are, whenever possible, grounded in 'objective' and authoritative statements from 'accredited' sources. This means constantly turning to accredited social representatives of major institutions [...] Ironically, the very rules which grew out of the desires for greater professional neutrality, also serve powerfully to orientate the media in the 'definitions of social reality' which their 'accredited' sources - the institutional spokesmen - provide" (Hall, 1978: 58).

Further, the labour processes of television replicate the separation between research practice, scientific fact and social impact through their institutionalisation within programme-making departments. Historically, the BBC has divided the discovery of scientific knowledge and the social impacts of science into different departments; maintaining a separation between the content and the context of science into documentary strands which focus upon scientific facts and social implications (Gardner and Young, 1981: 175). Programmes like *Tomorrow's World*, *Horizon* or *Wildlife on One*, have tended to say little about the research agendas driving research, the ethical issues involve in research, and the cultural implications of this research. Television science therefore offers little scope for negotiating the practices of science, and the programme structures are relatively closed.

Silverstone shows how television's expositional form achieves this closure. Firstly, the *poetics* of the programme - strategies of narrative and form which appeal to emotion - assure the plausibility of the text "and its achievement in the generation of meaning, beauty and truth" (Silverstone, 1986b: 84). Secondly, the *rhetoric* of the programme appeals to reason, argument and reality, in order to persuade the audience of the accuracy and authenticity of its message (Silverstone, 1983). Working through these concepts Silverstone (1984) is able to provide a complex series of characteristics for analysing the narrative strategies in television science. These are worth reproducing, albeit in abridged form, for they demonstrate the complicated ordering of images and text within television programmes and the significance of the apparently neutral selections of material within the infinitely complex texts of television science.

Silverstone distinguishes between the *story* - what is told and the sequence of events in the story, and the *plot* - how the story is told and the rhetorical way in which the story is presented. *Stories* can be further divided into their mythic and mimetic aspects. Within the mythic story structure, the heroes and villains of dramatic quests are introduced, usually grounded within readily understood, everyday spaces. The mythic story structure supplies concrete emotional appeal and provides the narrative with momentum. The mimetic elements of story structure are the forms that provide textual authority through mimicking well-established conventions of narrative logic. These could be through conventions such as lectures or demonstrations, the model of a written argument, the conventions of classical scientific endeavour, or a correspondence to extra-filmic events like the passage of the seasons or diurnal rhythms.

The *plot* involves a complex set of rhetorical devices. Silverstone divides these into the rhetoric of the images; the rhetoric of the look; and the rhetoric of the voice. The *rhetorical*

images of television science are twofold. Firstly, authority is ascribed to the figure of the scientist in a white coat, as thinker, technician and interpreter. Secondly, science is a special pursuit through images of complex, unexplained instruments and the use of scientific texts. These are the classic visual metaphors of science on television which are found in many mainstream science programmes, unrevealing about the processes of science, but icons of its authority. The *rhetoric of the look* analyses the way in which sequences are shot and cut together, involving choices in camera angle and camera movement, as well as methods of editing sequences. Television science tends to naturalistic forms of filming, minimising evidence of the interventions of television through the use of well-lit images, steady cameras, and the pursuit of invisible editing. The sequences move between the close-ups and mid-shots, either through zooms or edits, to draw attention to important details and then back to context; echoing explanatory movements in science. Montage is mostly employed as a component of film grammar for building coherent sequences; though it can also be used to signal a meaningful metaphor or to link and juxtapose places, people or ideas. Lastly, the *rhetoric of the voice* concerns the strategies of plausibility and persuasion arising out of the various forms of commentary. Science documentaries use voice-overs or direct presentations to camera; rhetorics which persuasively imply knowledge and authority. Silverstone's (1984) analysis demonstrates that although programmes appear on our television as seamless representations of reality, each of these narrative characteristics involves deliberate choices. These choices not only construct the texts of television science as authoritative and coherent, they also construct complex ideological relationships about the nature and practice of science and its relationship to society.

Take Barbara Crowther's account of the narrative strategies in natural history films, for example (Crowther, 1995). Selecting programmes from *Wildlife on One* and the *Trials of Life* Crowther, identifies three story structures, each involving mythic and mimetic qualities, and each, she argues implying a gendered presentation of the practices of science and the interpretation of natural history. Firstly, there is the life cycle structure of wildlife films that follow an individual species not from birth to death, but from birth to parenthood and the birth of the next generation (Crowther, 1995: 130). The mimetic qualities of this story follows the orthodox, seasonal, reproductive models of animal life, yet these stories privilege the male line, focusing upon the struggle to continue male genetic identity with drama derived from male competition. The role of the female ends with reproduction (Crowther, 1995: 131). The other narratives she identifies are also concerned with strong males: with the naturalist as hero, on a quest for discovery; or the triumph of the (usually male) scientists over the mysteries of ‘mother nature’. Through the internal coherence of their narrative strategies such wildlife programmes mask their own constructedness. But their narratives structures also obscure the relationship of wildlife films to a wider set of cultural codes, which are central to the study of science and the media.

This focus upon the texts of television science raise important issues over who is privileged to speak on the scientific and technical questions now central to democracy, how these questions are framed and answered, and what perspectives these exclude. These are all issues explored in the growing literature on science communication which has focused upon the representation of scientific issues in the press (Nelkin, 1995; Irwin, 1995). This work does view science communication as more than a mixture of two pure worlds - science and media. Dorothy Nelkin (1995) introduces her revised edition of S*elling Science* through a discussion of "difference between interdependent communities" (1995:12), giving recognition not only to the tensions but also to the mutual reliance of the institutions of science and the media. The worlds of science and the media are also linked through their desire to gain "control over the information and images, the values and views, the signs and symbols conveyed to the public" (Nelkin, 1995: 13). Control over information, constructions of authority and the creation of public legitimacy are important processes through which expert systems achieve status, trust and credibility, and this work is valuable in pointing out the institutional and informational links through which science and the press accomplish this. However, looking at television documentaries raises additional issues. The authority of science is not only constructed connotatively through rhetorical strategies, and through institutional authority, it is also upheld by the unusually powerful denotative status of the documentary form. To understand the complex texts of television science, it is necessary not only to deconstruct documentary texts, but to understand its technological basis in methods of inscription that owe much to the practices of science.

2.1.4 The Science of Television Science

There are many questions about the relationship between signification and reality in television science which introduce a further series of actors to the complex negotiations over documentary forms. Corner suggests that: "it would be hard to find a category of media output where the technological, the aesthetic, the social and the political have impinged so directly on one another for so long, and in such a complexity of combination, as in various forms of the documentary account" (Corner, 1986: vii). Technological form is particularly important in television science for: "most documentary work is premised on a consideration of the technological capacity to produce 'traces' of reality, and thus in some eyes to offer secure ground for a representational realism" (Corner, 1986: ix). The authority granted to documentary representations as scientific inscriptions with the power to lay bare reality, is as important as the narratives in which these images are embedded. Analysis of television science demonstrates how texts function ideologically through the relationships between referent, signifiers and signified, and characterisations and narratives shared with other television forms. However, it is the status of the referent that distinguishes documentary film from fiction (Renov, 1993: 2). As Latour suggests: "when we are dealing with science and technology, it is

hard to imagine for long that we are a text that is writing itself, a discourse that is speaking all by itself, a play of signifiers without signifieds" (Latour, 1993: 64).

Winston suggest that the "scientific connection to documentary is the most potent legitimation for its evidentiary pretensions" (Winston, 1993: 41). Slater (1995) and Winston (1993) challenge the taken-for-granted, realist interpretations of photographic images. Through analyses of early photography, both authors demonstrate the deliberate removal of the still and moving camera out of the realms of fantasy and the fairground, and into the sphere of science. Winston, for example, charts debates in early nineteenth century France, that located the camera within a scientific locus and class of instruments that included the microscope, the telescope, the thermometer, hygrometer and barometer (Winston, 1993: 37). The development of a realist way of reading film followed from viewing photochemically-produced images as a fully indexical sign that could record unmediated sections of reality. This positioned the camera within the same empirical tradition that viewed the thermometer reading as a direct inscription of temperature, and unleashed the social, legal and scientific power of the photographic image to act as an impartial observer of social and nature phenomena[3]. Cosgrove suggests that this period is the:

> "origin of photography's powerful claim to mimetic truth, a claim only successfully challenged during the last two decades. Bureaucratic and judicious acceptance of photography as documentary and legal evidence in the 1890s fostered the assumption that the camera cannot lie. The photograph implied a human eye behind the camera and thus a 'witness' whose image testified to the veracity of the recorded event" (Cosgrove, 1994: 278).

This denotative status of the documentary image is also the basis for the many debates around the aesthetics and ethics of realist forms (Williams, 1980; Nichols, 1991, Corner, 1992, Collins, 1986). The documentary codes of realism are both complicated and multi-discursive. I therefore want to use a simple two-fold division within these codes that examines the basis of the documentary films claim to truth: a division between *naturalism* and *realism*. Both approaches privilege the ability of the camera to reveal reality, through different, though not exclusive ways.

The style of naturalism, seen in ciné vérité and the work of Vertov, Flaherty and Graef emphasises the importance of location shooting, aiming to minimise the interventions of the

[3] From the earliest days of photography, nature and natural science were in the frame. For example, one of the famous pioneers of moving pictures, Edward Muybridge was involved in experiments to understand how horses galloped in the search for how best to improve the horses' gait. Muybridge placed a series of cameras side by side along a track; from these cameras parallel threads ran across the track. A horse galloping through them clocked the cameras in swift succession and the resulting photographs gave information on each stage of the gallop. Muybridge later learnt to project these images with an adaptation of the magic lantern to show the horse galloping (Barnouw, 1974: 3). Muybridge's experiments were followed by the work of the Frenchman Etienne Jules Mavey who was primarily interested in bird flight. Mavey devised the *fusil photographique* - a photographic gun - which could follow a bird in flight while 'shooting' at split second intervals. Projected onto a screen the results of this process provided 3 to 4 seconds of film from which to study the flight behaviour of birds (Barnouw, 1974: 4).

film-maker in order to access reality. "Naturalism is distinguished by scrupulous fidelity to minimise mediation through consciousness of the real, in perception and in representation" (Collins, 1986: 130). The ability of the film-maker to witness reality is ensured by the film-maker's presence at the point of filming, and through the absence of any intrusion. The technological means through which the film-maker inscribes reality is therefore a key component of naturalistic forms of film-making. Collins suggests that this is a code that has characterised the aims of documentary film-making at the BBC, and moreover, that it is one accompanied by technological change. "Within broadcasting there has been a consistent push towards the refinement of technical equipment to reduce what the BBC's *Principles and Practice in Documentary Programmes* describe as the constant obstruction between the producer and his subject" (Collins, 1986: 131).

The documentary forms of realism on the other hand, seen in the work of Eisenstein or Grierson, followed a more analytical motivation, offering an interpretation, even reconstruction of the real, through the project of reference, or being about the real (Corner, 1992). The documentary form is used to offer a critical distance upon historical, social or natural events and to reflect artistically or sociologically, upon the reality of human identity. Technology also plays a role within realist documentary codes, through its ability apparently to enhance reality. This is evident in Grierson's remark about television, that the 'arbitrary rectangle of the images' seems to enhance, or rather reveal movement (Williams, 1980). Both these documentary codes form an important, though largely unexplored, part of the evolution of documentary traditions on television.

The unwritten histories of natural history film-making involve many strands currently absent or undeveloped within media studies: the interrelations between institutional and narrative forms of science and the media, a concern with the referents of television, and an historical focus. Media studies are not renowned for their historical imagination, despite occasional calls that a more sustained treatment of "the longue durée of television history - by which I mean decade and years rather than minutes and second offers exciting possibilities for cultural history" (Schwartz, 1992: 456). The textual focus of much media research appears ill-equipped to deal with those elements of nature that are beyond discourse. These are particularly important in television where "broadcast television's institutional nature, generic order and modalities of viewing pose questions about text-reality relations in ways significantly different from either cinematic or literary forms" (Corner, 1992: 98). Moreover, media studies are prone to reductive explanations that focus upon media institutions and remain "profoundly incurious about the processes whereby sources engage in ideological conflict *prior to or contemporaneous with the appearance of definitions in the media*" (Schlesinger, 1990: 68, original emphasis). My frustration with these absences, and my interest in engaging with the natural and the cultural, technological and the social, science and the media concurrently,

meant that I turned to science studies for different and more symmetrical ways of asking these questions.

The literature of science and technologies studies raise new questions about the ontological and epistemological status of science, and since they deal with the materiality of science, they also offer the potential to re-examine the status of the referent within natural history films. In the work of Bruno Latour and others, science is differentiated from the everyday, not through epistemological differences, but through material effects; thus helping to break down the separate worlds of science and the media, recognising that science is not a monolithic category, and recovering an important history of the use of images in science, particularly of course, within natural history. Science studies also demonstrate how these strategies of *science in action* are instantiated in historical and geographical spaces. In viewing the processes of science and the media not as distinct and concrete categories, but rather as the achievement of universalised discourses, science studies opens up a way for exploring the ways that organisations control flow of information, material and communication over time and through space. At the same time, a more contested, and more permeable boundary between the scientific and the everyday, opens up multiple positions for negotiation and responsibility between a variety of actors.

A few authors are beginning to make similar connections. Gardner and Young (1981) and Collins (1987) include references to Latour and Woolgar's (1979) early work on the processes by which scientific knowledge is constructed within the laboratory in their calls for more questioning of the scientific certainty constructed on the television screen. Potter and Wetherall (1994) use the work of science studies on representations to examine the certainty attributed to medical evidence within a programme on cancer research. Finally, as mentioned above, Winston (1993) has examined the early positioning of the documentary camera within a scientific nexus, using Latour's ideas about scientific instruments and inscription. I have found little else, and in the work of Latour himself sustained discussion of the media is largely absent. In section 2.2, I therefore want to introduce some of Latour's ideas and explore their value for accounting for key moments within scientific approaches to natural history. I will then go on to discuss how the work of Latour and other sociologists of science may be of value for understanding the varied and complex processes of *doing* natural history television.

2. 2. Part II: "Doing Science"

2.2.1. The Social Construction of Scientific Knowledge

In this sub-section I will examine some of the academic literature on the social construction of scientific knowledge, in order to explore what it is about science that differentiates it from popular understandings, and to re-evaluate some of the links between the popular and the

scientific through looking at the processes and materials through which science itself is practised. In particular, I want to elaborate the work of Bruno Latour, who has examined the mutual constitution of the scientific and the social, alongside the contemporary proliferation of hybrid objects that span across these two realms. This sub-section uses Latour's ideas to examine how science is privileged to speak for nature, the power of these discourses over space, and the role of representation both within scientific communication, and for the popularisation of science. In section 2.3. I want to use this work as a starting point from which to look at some of the dominant scientific discourses of nature from early natural history through to socio-biology, as they are constructed and communicated, and the different ways that animals are represented, or black-boxed within these discourses. This focus on the processes of doing natural history, opens the way for a more symmetrical consideration of natural history film-making in the final section of the chapter.

In the last few years, from being on the fringes of academic perception, the study of science as a social construction has become of strong and abiding interest to many (Driver, 1994). A growing number of social theorists place the construction of scientific knowledge and expert systems at the heart of their work (for example, Giddens, 1991; Beck, 1992; Latour, 1993). The study of science itself has moved away from narrow philosophical concerns, to a proliferation of research which addresses the methodological practices of science and refocuses questions over the truth claims of science to look at the material processes through which knowledge is constructed (for example, Latour and Woolgar, 1979). Social studies of science have been invigorated by historical and geographical examinations of science, drawing attention to the situatedness of scientific understanding and the context of scientific debates (for example, Livingstone 1995). Moreover, the new discipline of the Public Understanding of Science has developed alongside its own internal critique, to examine the permeability of the boundaries between the scientific and the popular, to explore how different publics use science, and how science constructs its own public (Wynne, 1996). Thus, while Pepper asserts that the dominant discourse of nature since the late Eighteenth century has been that of science (Pepper, 1996), science is no longer understood as a monolithic and separate category, but one that interrelates with society in many complex ways. And William’s suggestion that nineteenth century science, and especially evolutionary theory, has played a fundamental role in shaping lay understandings of nature (Williams, 1972), provides only a starting point for examining how the construction of scientific knowledge and lay understandings are related.

Since the publication of Popper's falsification theory and Kuhn's work, *The Structure of Scientific Revolutions*, it has become philosophically untenable to claim that science provides access to the truth about nature (Kuhn, 1970; Popper, 1968). Natural science is no longer able to claim to be working towards a full revelation of the truth about nature, but rather is seen as working with partial or relative truths that vary according to the particular lens or paradigm through which they are approached. These studies open up the everyday practices of natural

scientists to the scrutiny of sociologists. Kuhn positioned scientific orthodoxy at the heart of the practices of scientists, working to protect their heuristic programme, until it is unable to contain further contradictory results. This attention to science in the making paved the way for ethnographies of scientific practices, showing how scientific consensus is achieved in similar ways to other kinds of knowledge.

Previously, sociologists of science had concerned themselves only with institutional aspects of science, abstracted from specific research contexts - "ethical norms, systems of reward, status differentials, community configurations, role requirements, and stereotypical personalities" (Lynch and Woolgar, 1990: 3). Social explanations were given to experimental conduct and findings only under conditions where they were found to be erroneous or fraudulent. However, the strong programme in sociology of scientific knowledge sought sociological explanations of all scientific beliefs, regardless of the 'truth' or 'falsity' eventually assigned to such beliefs (for example, Bloor, 1976; Barnes, 1974; Barnes and Shapin, 1979). Science was seen as inevitably driven by tangible social interests and linkages. The history and context of science were examined with fresh vigour as "every aspect of scientific theory and practice expresses socio-political interest, cultural themes and metaphors, personal interaction, and professional negotiations for power to name the world" (Bird, 1987: 256). Where previously, studies of science had focused upon the investigation of the context of science with the aim of purifying its content, the recognition of the social construction of science blurred the distinctions between content and context. All of science became open to sociological investigation in the study of the social construction of reality.

However, as sociologists of science challenged the realism of the natural sciences, scientists challenged the relativism of sociology. In claiming sociology as a position from which to critique science, this work not only risked establishing a sociological hegemony over science, but of simultaneously undermining its own epistemological position to be outside these considerations. As Donna Haraway suggests, both realism and relativism are "god tricks" promising vision from "everywhere and nowhere, equally and fully, common myths in rhetorics surrounding science" (Haraway, 1991: 188). Subsequent work has therefore sought to establish a more symmetrical relationship between the disciplines: one which can use a single repertoire for analysing both the social and the natural, to explain conflicting viewpoints in the same terms. Science and technology studies, typified by scholars such as Bruno Latour and Michel Callon, have sought to examine the construction of the networks of science, in which the social and the natural are combined, through what Latour calls the 'anthropology of modernity' (Latour, 1993).

2.2.2 The Anthropology of Modernity

In his analysis of modernity, Bruno Latour charts the development of modern knowledge systems and how scientific knowledge has come to be distinguished from other knowledge practices (Latour, 1993). His monograph *We have never been Modern* addresses the boundaries between nature and culture, focusing on the development of legitimate ways of representing each side of this constructed duality, which was the focus of the previous chapter. He looks at the way there has been a purification between the realm of nature and things, witnessed through experimentation in the laboratory; and the realm of the subject and society, as represented in the world of polity (represented by the top half of figure 2.1). Latour uses the work of Shapin and Schaffer to trace this divergence of spheres, from Hobbes' Leviathan and Boyles' air-pump to the present (Shapin and Schaffer, 1985). His argument centres around the processes of purification whereby the "modern constitution invents a separation between the scientific power with representing things and the political power charged with representing subjects" (Latour, 1993: 29). This purification is part of the packaging of nature that allows it to be experimented on, modified, sold and exchanged. It simultaneously closes down open discussion over how to approach nature, while allowing nature to remain a transcendental receptacle of morality. Herein for Latour lies the power of modernity:

> "The critical power of the moderns lies in this double language: they can mobilise Nature at the heart of social relationships, even as they leave Nature infinitely remote from human beings; they are free to make and unmake their societies, even as they render its laws ineluctable, necessary and absolute" (Latour, 1993: 37).

Such is the power of the division that Latour, unlike some critics would wish to retain aspects of this analytical purification.

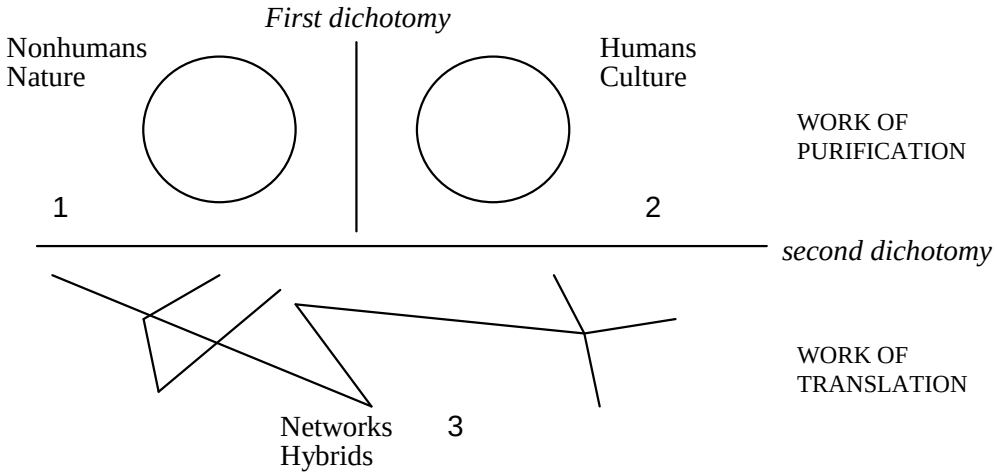

Figure 2.1 Purification and Translation
(source: Latour, 1993: 11)

So far, Latour's account of the nature of modernity is very similar to that of other writers. However, Latour goes further, as suggested in the title of his book, in claiming that this act of purification has only ever been partial, and that at the present juncture of what he terms the *non-modern constitution*, the processes of translations are now as important as those of purification (represented by the bottom half of figure 2.1). As he puts it "heaven and earth, the global and the local scene, the human and the non-human" (Latour, 1993: 3) are woven together in the void of the separation that allows the proliferation of hybrids it denies (Latour, 1993: 38). The significance of this double separation is that it unleashes the ability to produce hybrid forms. These would have been unthinkable in a culture where nature and society remained intimately conceptually interrelated, where it is evident that changes in one resulted in changes in the other. By being seen to break this link, and releasing both nature and culture to different spheres of representation, new objects, categories or quasi-objects, can proliferate as nature and culture are woven together in new configurations that are seen as incidental or external to each representation.

Latour looks to the mass media for evidence of the routineness of these radical hybridisations. He begins his book by suggesting that any daily newspaper will reveal the increasingly inevitable intersection of what had been seen as previously incommensurable worlds. Opening the newspaper and reading an article about the ozone layer, chemical companies, politicians, chemists, international treaties, and the rights of nations and generations, he observers that:

> "the same article mixes together chemical reactions and political reactions. A single thread links the most esoteric sciences and the most sordid politics, the most distant sky and some factory in the Lyon suburbs, dangers on a global scale and the impending local elections, or the next board meeting. The horizons, the stakes, the time frames, the actors - none of these is commensurable, yet there they are, caught up in the same story" (Latour, 1993: 1).

Latour goes on to suggest that existing semiotic analyses of the way that the media texts create meaning have had the effect of actually disentangling and re-purifying these actors and narratives. In their concern with the way that "texts and language make meaning [and] produce references internal to discourse and to the speakers installed within discourse [they] render more difficult the connections between an autonomized discourse and what they had provisionally shelved: the referent - on Nature's side - and the speaker - on the side of society/subject" (Latour, 1993: 63-64). Latour's approach to dealing concurrently with the processes of translation and purification, the referent and the speaker, is through the concept of networks.

The processes of purification and translation weave actors and material objects together from what were seen as previously separate worlds: mixing the social and the natural, the politics and the economic, the global and the local, content and context, and blurring the boundaries between structure and agency. Latour calls these configurations of different actors and objects

networks; a term that has epistemological as well as ontological implications. He suggests that to reconnect these different spheres, or "to shuttle back and forth, we rely on the notion of translation, or network. More supple than the notion of system, more historical than the notion of structure, more empirical than the notion of complexity, *the idea of network is the Ariadne's thread of these interwoven stories*" (Latour, 1993: 3, my emphasis). Whereas the processes of purification work to separate the knowledges of nature and society, breaking up segments of reality to be studied by different disciplines, the processes of translation reconnect these spheres, and can be studied through following the actors as they make the network. The objective of network analysis is to follow the construction of these networks, to show how they are made and the range of their effects. The practice is to follow the actors in order to identify the manner in which they build their world, whether it be social or natural. The concept of networks aims to work across modern sociological binaries such as the natural and the social, the macro and the micro, structure and agency. Additionally, Latour asserts that networks work across semiotic divisions, and are simultaneously "real like nature, narrated like discourse, and collective like society" (Latour, 1993: 6).

2.2.3. Networks of Nature

Latour's ideas claim a huge scope, and I will approach them in a limited number of ways which are valuable for my thesis. Firstly, I outline the value of networks for including the actors, such as those introduced in Chapter 1, traditionally excluded from sociological accounts. Secondly, I then explore the spatial dimensions of actor networks, the privileged sites of scientific research, and the geometry of ways networks are mobilised to achieve a universalised status. Thirdly, I discuss the role of scientific representations within networks exploring their role in the ability of networks to act over space, and beginning to break down and historicise the division between scientific and popular representations. Finally, I shall give an account of three episodes in natural history where I think the value of a network approach can be illustrated: the establishment of the networks and institutions of visual natural history classification, the use of film in biology and the nature of the biological gaze, and the position of *animals* within the discourse and practices of science. These three narratives explore the power of network analysis to understand the ability of natural history discourses to act over space, to enrol animals and the tensions that emerge over the extension of networks.

Networks are valuable concepts allowing social scientists to investigate the social, natural, the political and the economic concurrently. The network is a unifying concept that underlies all manner of relations between actors, entities and artefacts, prescribing only that in studying the construction of these networks one should follow how actors are enrolled into heterogeneous sets of relations, and how their interests are modified. This endeavour involves different conceptions of power, agency and actors from traditional sociological accounts. Latour's analysis opens the way for considering agency in terms of action-in-context, and positioning

power as a composition made by many actors but attributed, via representation, to one of them. Actor network theory incorporates a wider number of agents than are usually permitted in sociological analysis, for the networks are composed of heterogeneous actors: humans, technologies, and nature, all of which are attributed some form of agency within the network. These non-human actors and their effects Latour calls "the third estate of things" (Latour, 1993: 50)[4].

There are many examples of actor networks illustrated in the science studies literature. Latour's latest book explores the reasons for the failure of the guided transportation system for Paris; a story that brings together engineers, company executives, elected officials, a sociologist, and problematic electronic couplings (Latour, 1996). Callon's well known piece on fishery quotas in St. Breiuc Bay, includes scallops as an agent, amongst fisherman, officials and scientific researchers (Callon, 1986). Law's book on the laboratory management explores the conflicting modes of ordering matter within Daresbury research laboratory, under the ever present needs of the SR Accelerator, the NSF van de Graaf, and the supercomputers (Law, 1994). The focus on materiality resonates with much work within contemporary cultural geography, searching for new ways to narrate the previously ignored relationships between nature and technology. As Latour suggests, the very notion of culture is an artefact created by bracketing off nature (Latour, 1993: 104).

Network analysis works with a diffused concept of power, attributed to the effectiveness of associations. Latour argues that the amount of power exercised is not related to how much power one person has, but to the number of actors involved in the composition of the network. These actors are combined in actor networks, although each actor may belong to several actor worlds. What ties these actors together is the process of translation or enrolment. The notion of translation attempts to get at how some actors gain the right to speak for others and how they impose particular definitions and roles upon these others. Translation requires two things. An entity must first be enrolled so that they participate in the network, and then their behaviour must be controlled in order to make their actions predictable. For linkages to be successful actors must share explicit interests, which often involves redefining new goals; or an actor must 'colonise' the worlds of others. Translation has several connotations. It has a linguistic meaning, in relating versions in one language to versions in another: the network speaks for others, but in its own language. It also has a geometric meaning in the movements of representations, actors or entities from one place to another enabling the network to speak for others distanced in time and space. However translations are never stable or fully achieved, but

[4]Incorporating non-human entities into networks and attributing agency to them, raises some problematic and possibly unanswerable questions relating to the existence of consciousness in non-humans, and particularly animals. Latour avoids this issues with his research on technologies or bacteria, and in fact these questions are incidental to his insistence upon agency as the effect of relations and alliances. These questions are also beyond the scope of this study, except to the extent that they are raised by natural history film-makers themselves as part of the tensions over the ways that they construct and work with different representations of animals.

always have to be maintained. Entities can be redefined by their associations with other networks, and the network's ability to control and make predictable the actions of its actors can fail. I shall expand on the geometric implications of translation in sub-section 2.2.4. on the situatedness of science, and touch upon some of the linguistic concerns in the sub-section 2.2.5. on representation.

2.2.4. The Situatedness of Science

Science studies depict the pursuit of scientific knowledge as an intensely practical way of life, located in particular places, involving particular objects and involving the construction of moral bounds and natural attitudes within these locations. Science is therefore epistemologically no different from any other form of localised or situated knowledge. Latour (1988) suggests that science has no greater access to reality than other forms of knowledge, rather that it is more powerful because it is able to act over greater distances. I want to explore these spatial insights into science further in this section for they have had an obvious hold within developing geographical approaches to the study of science.

As Nigel Thrift summarises: "The study of science as a social construction has been pursued through a peculiarly spatial imaginary, which always attaches insight to the site. The locales in which scientific knowledge are produced are not seen as passive backdrops, but as vital links in the chain of production, validation and dissemination" (Thrift et al, 1995: 2). Livingstone (1996) has explored these geographies of scientific knowledge through the different cultural contexts in which Darwinian ideas were disseminated. Murdoch and Clark (1996) have explored the spatial dimensions of science to compare the basis of the environmental movement's ambivalent relationship with institutional science alongside its claims for local knowledges. Demeritt (1994a, 1994b, 1996a) has consistently used new metaphors of hybrid or cyborg nature alongside the spatial nature of science, to challenge what he sees as the inability of contemporary cultural geographers or environmental historians to embrace the potential of developments within science studies for rethinking society and environment relations.

The situatedness of science, and the movement of science over space are both constituents of the geometry of networks. This directs attention to how resources are concentrated in a few places, the *nodes*, which are connected to one another via the *links*. There are therefore two aspects to the geographies of scientific knowledge: questions of what sites and locations become the nodes or privileged sites of science? and questions over the reach of the network - how centres of translation are able to act at a distance, and how others in distant places and times find themselves fixed by strategic centres? These questions are obviously related to the roles of representations in science, which are an important component of translation, but for ease of presentation, I will treat the two separately.

The first question about the privileged sites of science has focused attention upon the construction of laboratories, field sites and institutions and museums of science as centres of translation. In looking at the way that scientific knowledge is made and sustained through detailed practical activity, the laboratory or research station is often the starting point, as a space that is removed from the wider social consideration, and is thus able to combine actors in powerful new ways. The ethnography of Latour and Woolgar (1979) shows how facts become stabilised only through a process of social negotiation among scientists who have a stake in the outcome. Scientific consensus is reached not when the 'facts' are accumulated to the point where they might be said to 'speak for themselves', but rather when the political, professional and economic cost of refuting them are such that further negotiation becomes untenable. This negotiation also involves other actors, such as nature and technology, which can recombined in powerful ways in the laboratory. Thus "the technical contents of discovery, experimentation, replication, argumentation, and representation, now made up a roster of sociological topics to be studied as situated processes of knowledge production and not exclusively as methodological and epistemological concerns" (Lynch and Woolgar, 1990: 4). The laboratory is not only the place where scientific knowledge is constructed discursively, it is also the site for the construction of new nature/culture hybrids.

This account contrasts sharply with traditional accounts of the objective and passive observation of new phenomena in the laboratory. Latour's study of Pasteur, presents a new way of perceiving scientific discovery within the laboratory, arguing that Pasteur's discovery of the anthrax vaccine rested on transforming the object by freeing the bacilli from other competition, allowing it to grow unhindered in the lab (Latour, 1988).

> "To this way of thinking, Pasteur is no longer the great discover of long-hidden bacterial microbes, but rather a master of logistics whose singular achievement was the three-step assembly of the network of modern medicine. First, Pasteur enrolled microbes in Petri dishes and on microscope slides carefully designed to be hospitable to them. Then, with this change of scale enabled by the laboratory, Pasteur could control [these] bacilli" (Demeritt, 1994a: 179).

The social practices of the laboratory also construct a *particular witness* to science which is essential to the subsequent power of science to move out of the laboratory. These modest witnesses[5] are part of the processes through which scientific knowledge is born within the laboratory but are subsequently erased from the emerging representations. The modest witnesses of science have enormous power, granted the authority of detached observation. As Haraway puts it, the "natural sciences, like human sciences, are inextricably within the processes that give them birth [...] it makes sense to ask what stakes, methods and kinds of authority are involved in natural scientific accounts [...] the detached eye of objective science is

[5]The term 'modest witness' is used by Shapin and Schaffer (1985) to signal the participation of scientists who are rendered invisible in the conventional accounts of scientific endeavour. It also features as part of the title of Donna Haraway's new book (1997), in a similar but more radical guise as an important constituent of contemporary cyborg systems.

ideological and a powerful one" (Haraway, 1989: 12). The sites of the production of knowledge are very diverse, covering the laboratory, the lecture hall, the observatory and the museum. Each speaks for nature and is able to mobilise its representations in a particular way. Furthermore, access to sites of production is restricted through "the process of constitution of the fields in and through which scientific knowledge can legitimately be gathered" (Thrift et al, 1995: 2). There are a number of accounts, often ethnographic, examining the entry into scientific institutions, the routines and habitats of laboratories, the equipment and the new technological and natural hybrids created, and the many diverse forms of inscribing and subsequently mobilising research (Law 1994; Latour and Woolgar, 1979). These studies focus upon the situatedness of science within the laboratory, opening up the processes through which scientific knowledge is made and looking at how nature is incorporated into a network of social and cultural relations.

The second set of questions about the geographies of scientific knowledge identify the processes through which science is able to act over space. Different people, objects and representations are mobilised to allow scientific knowledge to be constructed at a distance. These might include the well known scientific resources through which scientists communicate with each other - lecture tours, scientific societies, publications - as well as the use of other media, such as letters, telephones, e-mail, the slide projector, radio and television, through which scientific knowledge has been disseminated. The solidity of scientific facts is said to increase with distance from the scene of creation, acquiring facticity through their divorce from the contingencies of origin. Collins suggests that: "science only looks certain when one moves away from the 'core-set', either in sociometric space or in time" (Collins, 1987: 692). More than this though, Latour suggests that the power of science is only achieved through reconfiguring reality so that laboratory conditions can be achieved outside of the laboratory. Laboratory facts do not move outside the lab unless the lab is first brought to bear on an "outside" situation and the situation is transformed so that it fits the laboratory prescriptions. Latour suggests that "scientific facts are like trains, they do not circulate outside their rails. You can extend the rails and connect them, but you cannot drive an engine through a field" (Latour, 1983: 155).

Scientific facts are globalised from the local of the laboratory by the extension of these conditions back to the global, enabling some views of nature but not of others. Latour's discussion of supra-local forms of control is therefore related to Foucault's concept of power; both are the result of a standardisation of successful local practices (Latour, 1987). Universal validity is a contingent fact: it is produced within each separate location enabled by networks of discourses, entities and actor. Universal validity it is not a law-like structure that finds its expression in individual phenomena. To go back to the anthrax bacilli, Pasteur's work could only be applied through his ability to control these micro-organisms outside of the laboratory. The dissemination of his ideas also depended upon his ability to make these micro-organisms

visual through the spread of microscopes, and the export of the sterile conditions created in the laboratory into the wider community. The key to the power of science and, for Latour, what makes us different from pre-modern societies is therefore not any radical epistemological differences. It is located in the ability gained through enrolling and enlisting new technologies, machines, facts and institutions, and comes from having merely invented longer networks, through which science can act at a distance. Thus, Demeritt suggests that "Latour's vocabulary of networks provides a helpful way to think about how and why socially constructed facts of science actually work for us without appealing to realism and the correspondence of those facts to some worked external to them, or to relativism and some form of pragmatic agreement about arbitrarily constructed facts" (Demeritt, 1994a: 180).

According to Latour, one of the problems of much previous sociological analysis is that it has tended to transform the lengthened networks of Westerners into systematic and global totalities (Latour, 1993: 117). He asserts however, that while these modern networks are now global in scope, they remain local; they operate through connected lines and not surfaces. An advantage of this approach is that it breaks down the reified categories of science, nature, and the media, and replaces them within ongoing processes of negotiation. As Latour lyrically puts it:

> "Take some small business owner hesitatingly going after a few shares, some conqueror trembling with fever, some poor scientist tinkering in his lab, a lonely engineer piecing together a few more or less favourable relations of force, some stuttering and fearful politicians; turn the critics loose on them, and what do you get? Capitalism, imperialism, science, technology, and domination. In the first scenario, the actors were trembling; in the second they are not. The actors in the first scenario could be defeated; in the second they no longer can. In the first scenario, the actors were still quite close to the modest work of fragile and modifiable mediations; now they are purified, and they are all equally formidable" (Latour, 1993: 125-126).

These negotiations are not only open to non-scientists and non-humans, they necessarily include them. The sociology of translation avoids - indeed forbids - analysis posed in terms of *a priori* distinctions. It does not side-step the issue of power, but suggests that power emerges as actors attempt to enrol others to their representations, interests, strategies and aims. In so far as power relations do have global significance, it is achieved by example rather than from a single command post. To investigate the effectiveness of power, one must only follow the construction of the network as the actors attempt to impose their worlds on others. Within geography, for example, Murdoch (1994) has used this analysis to look at range of social, natural and political actors as they construct networks and thus 'make' the rural. Within economic geography networks have been used to explore the control of materials and information from within centres of accumulation, and over space, as business vie for position within a Post-Fordist period of flexible accumulation (Thrift, 1996). Representation also plays a key role in network construction, and science studies have reinvigorated the study of the role of images in scientific practice as I shall now discuss.

2.2.5. Representation and Scientific Practice

Representation is an explicit issue in science, and the adequacy and efficacy of any representation, whether survey, statistic, graph or graphic, is addressed within each scientific discipline by a large literature. Recognition that: “the organisation, sense, value and adequacy of any representation is reflexive of the settings in which it is constituted and used” (Lynch and Woolgar, 1990: 11), is also of value to sociologists of science, who are increasingly looking at the role of visual representation in science, in order to understand the ways in which the commonplace and often hidden aspects of scientific practice enter into the construction of scientific knowledge. There is a growing volume of research upon the role that representations play within scientist-to-scientist communications. These examine how representations function as black-boxed inscriptions: taken-for-granted aspects of scientific research which nevertheless make powerful visual links, or translations, from the empirical to the theoretical, and are a rich repository of social actions. These studies look at the incidents of controversial science to study science in action, because these are important points before which black-boxing occurs.

Martin Rudwick's (1976) essay on the visual discourses of geology in early nineteenth century European culture exhibited some of the promise of visual representation in unveiling social interactions at work in the activity of science. Subsequent work focused largely upon the iconographic power of visual representations in science; the ideologies of race, gender and class that these reflect; and their implications for guiding scientific research. For example, Emily Martin's (1991) study of the representation of research into human fertility shows how the attribution of stereotypical feminine and masculine characteristics to the ovum and the sperm have guided research agendas. Much of this work focuses explicitly upon medicine, as an arena where key aspects of social beings are forced into a dialogue with the ‘natural’ categories of science, themselves in turn related to culturally dependent metaphors. In this sense it can be suggested that: "the history of science is among other things a history of analogies and metaphors” (Krementsov and Todes, 1991: 68).

Representations in science also have an important role in science studies as suggested by Latour, as *mediators* in the construction of networks. The practices and technologies through which representations are constructed are important components of the network; accessibility to these forms of representations will concentrate power at the nodes of the network, while the dissemination of these representations affects the size and scope of the network. The ability of representations to link empirical reality to abstract theory is a key moment of inscription within the network, whereby the ability to make the object under study more stable, more visible and more predictable becomes important to extending the network. For Latour therefore, the use of representation in science-to-science communication represents a key point of inscription or translation, whereby entities are enrolled into the network, enabling scientists to speak for heterogeneous aspects of reality. A second key processes of transformation occurs as the

expanding scope of the network redefines these objects, making entities from different times and different places combinable.

Lynch and Woolgar (1990) have compiled studies which explore representation in scientific practice in this way, and a number of themes emerge from their work. They recognise the importance of studying representations within their social context: “the inseparability of a theory of representation from the heterogeneous social contexts in which representations are composed and used” (Lynch and Woolgar, 1990: 12). This widens a focus upon the use of metaphors in scientific representation, to include a consideration of the different ways that metaphors are composed and contested in different places. There is further attention to a reflexive understanding of the role of representations and the substantive effects of forms of representation. The "necessity of incorporating the process of interrogation into the investigation of the object of investigation” (Thrift et al, 1995: 1), moves questions of reflexivity in social sciences away from a concern with biography and into a broader recognition of the inseparability of the acts of looking and touching, something recognised, though not often utilised, in science since the establishment of Heisenburg's uncertainty principle.

The reconceptualisation of the links between representation, theory, metaphor, social practices and material objects, moves a series of broader questions about representation in science into the centre of the sociology of science. In particular, a concern to position representation within the networks of institutions and scientific practice is reflected in recent work on the history of science. Stemerding's comparison of Buffon's and Cuvier's approaches to natural history classification suggests that: “we should not focus upon epistemological or theoretical concerns and justifications of these naturalists, but on the concrete and heterogeneous means or tools through which animals were mobilised, stabilised and combined into ever more comprehensive systems of classification” (Stemerding, 1993: 193). Blum (1993) looks at the scientific and technical aspects of American Nineteenth Century zoological illustration and the consolidation of pictorial convention in the wider zoological context. Secord (1994) has examined the dependence of early nineteenth century natural history on a huge range of correspondence as a means of gathering information and specimens. And Allison (1995) in a study of the processes by which curators make nature 'real again', compares the practical tasks of generating public exhibitions in natural history museums, to their reliance upon esoteric research for factual authority.

A focus upon the concrete processes of doing science examines the dependence of scientific projects upon a range of enrolled amateurs, entities and institutions, and emphasises the importance of trust in the integrity of representations for keeping the networks of science together. There is still, however, relatively little work on the role of representation in scientist-to-non scientist communications that addresses the perennial permeability of these boundaries.

As a consequence, the theoretical ideas discussed above have been subject to criticism by those academics concerned to validate the political spaces where non-elite or marginalised groups construct, articulate and deploy science. For example, Cooter and Pumfrey (1994) suggest that the focus upon the production of scientific discourses is overly dominant, identifying a limitation whereby "in the work of Bruno Latour, in particular, cognisance of the fact that "we live inside the world built for us by science" has not served to legitimise the study of the ethnoscience of our world, but rather the anthropology of the lab" (Cooter and Pumfrey, 1994: 242). Science studies have explored the ability of scientific facts to move out of the laboratory and over space, yet there is little attention given to the way that this processes is achieved through active mediators, or the possibility that science may be contested by different publics. In this sense, what started as a radical critique of science, risks merely reproducing its power through the stories that it tells. For example, Haraway suggests that "in disrupting many conventional accounts of scientific objectivity, Latour and others have masterfully unveiled the self-invisible modest man. [But] perversely, however, the structure of heroic action is only intensified in this project - both in the narrative of science and in the discourse of the science studies scholar" (Haraway, 1997: 33-34).

One exception to the neglect of mediations is Mitman (1993), who has looked at early cinematic ‘nature’ in the American Natural History Museum. He explores the relationship between scientific culture and other cultural domains by examining the historical intersection of film as a communications technology intended primarily for entertainment, and film as a field and laboratory technology designed for scientific research. Mitman's conclusions are perhaps inevitable but they are nevertheless interesting in signalling the media as an important, yet neglected arena of science. He concludes that scientists, publics and animals alike have become part of the media spectacle in the post-Hollywood age. The importance of this conclusion lies in its recognition that scientist and their objects of study never merely inhabit one world or one network. Scientists, and scientific representations now form an important component of the many extended networks of scientific research, applied science, conservation and the media as different voices jostle for representation.

Before I continue to explore the implications of this observation for this study, I want to ground some of the above discussion with examples from the history of natural history disciplines. These illustrate some of the general points as well as highlighting the specificities of natural history. This is achieved through three examples: firstly, through the establishment of the visual forms natural history classifications; secondly, the use of film within the disciplines of ethology; and finally, through negotiations over the naming and ethical treatment of animals. In the final section of the chapter I will return to the processes of *doing television science* in order to explore the key points in the networks of both science and television as they are increasingly interlinked.

2.3. Part III: Interpretations of Natural History Traditions

2.3.1. Enrolling Animals and Natural History Classifications

In *Science in Action*, natural history figures as one of Latour's examples of the production of scientific knowledge (Latour, 1987: 224-225). Latour identifies a cycle of accumulation whereby plants and animals which are far away, invisible and unknown, are brought back to a centre where they are made known, well ordered and predictable, so that others may be sent out to bring more new organisms back. This characterisation of natural history as a cyclical process of accumulation through practices and discourses provides an interesting perspective on the importance of the visual in natural history, and the complex and two way relationship between the centres of accumulation and 'distant countries' through the mediations of a global discourse on nature.

Latour's account contextualises and links such enterprises as the description and preservation of natural history specimens; the establishment of natural history museums and zoological institutes; and the development of navigation, cartography and the tabulation of species. It is only through all these technologies that the objects of natural history are made mobile, stable and combinable, and thus knowledge about nature can be systematically accumulated. The mobility of animals and places refers to the processes by which places and organisms are made mobile through the collecting and descriptive practices of overseas, natural history expeditions. These empirical observations are stabilised within natural history descriptions, illustrations and cabinets, as well as mapping conventions. Empirical observations can then be used as the basis for the generation of general principles. The standardisation of descriptive practices makes this information combinable. Stemerding thus describes natural history as:

> "a process of abstraction that was made up of a chain of the most 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).

The process of producing natural history was based upon the *visual* description of species' morphological characteristics. This visual depiction of nature's order triumphed over other means of accounting for species difference, such as the experiments in species genealogy carried out by Buffon, precisely because it could be readily inscribed (Stemerding, 1993). Buffon's experiments failed to achieve pre-eminence because he did not have the means to make visible the history of forms 'in front of the eyes' of his fellow naturalists. The competition to become nature's spokesperson was won by the naturalist best able to use contemporary technology to make visible the link between empirical evidence and theoretical position, through their means of representation. In becoming nature's spokesperson, naturalists

had to align various heterogeneous elements, linking the 'real' and the 'abstract', the visual and the narrative. Through comparative anatomy, the naturalist Cuvier succeeded in rendering visible all the features of the animal body emanating from the work of naturalists, anatomists and physiologists, without losing the capacity to reduce the definitions of a classifications system to a minimum of words (Stemerding, 1993: 219). In this way "a handful of naturalists were able to visually dominate a world that nobody could command in the space and time of everyday life" (Stemerding, 1993: 197). Through these means and tools, natural history and zoological institutions begin to divide the scientific from the popular. This dominance arose because "the zoologists see new things, since this is the first time that so many creatures are drawn together infront of someone's eyes; that's all there is in this mysterious beginning of a science" (Latour, 1987: 225).

Once scientific institutions command a new way of seeing nature within strategic centres, they are also able to prescribe a correct way of experiencing nature outside the institutions. This is seen in the establishment of the aesthetic regimes that dominated zoos at the end of the nineteenth century, for example. In her work on the Adelaide Zoo in South West Australia, Anderson suggests that: "When the zoo opened in 1883, the exhibits were set out in conformity with prevailing classifications based on visible characteristics - reptiles, birds, mammals and fish - each exhibit was made to stand as a taxonomic specimen of a broader category" (Anderson, 1995: 283). Individual animals were displayed as a body which, through its morphological characteristics and depending upon taxonomic studies, stood in for the whole species. Thus the 7 lions and 2 tigers were displayed in cages lined with white tiles "to furnish an excellent background for visitors including natural history students and writers" (Anderson, 1995: 284). The visual technology of the zoo, and the visual classifications of natural history not only defined a way of being for animals but also a particular form of human interaction with animals. Anderson elaborates that the exhibits at the Adelaide zoo used the "Museum's visual technology [to produce] a particular form of human in relation to nature. This is a historically specific type of (white) masculine that is unseen, that is not the spectacle but rather the privileged eye (I), the bearer of reason, the author, the knower" (Anderson, 1995: 278). The new science of natural history was also a moral science: "a science of conduct and its relationship to environment, both moral and physical" (Driver, 1988: 279).

The centre of accumulation not only uses various means and tools to become nature's spokesperson, but additionally the concerns of the centre influence the interpretation and representation of the mobilised, stabilised and combinable artefacts. The emergence of these institutions in particular, geographical places often reflected contextual contemporary concerns. Katz and Kirby, mention the emergence of English natural history, suggesting that "geologists and biologists in the nineteenth century [...] were in part obsessed by taxonomy because they lived within class societies that were undergoing taxonomic transitions, and the power derived from defining what was included and excluded from particular categories was obvious" (Katz

and Kirby, 1991: 262). Haraway in her essay on “Teddy Bear Patriarchy" in the New York Museum of Natural History, points out how "decadence - the threat of the city, civilisation, machine - was stayed in the politics of eugenics and the art of taxidermy. The Museum fulfilled its scientific purpose of conservation, preservation and production of permanence" in the midst of an urban world that even at the turn of this century seemed to be on the border of chaos and collapse (Haraway, 1989: 27).

There is a corollary between new ways of seeing nature, and new ways of defining human conduct. These representations of nature were, in part, a means to communicate to the general public a sense of the true organicism of the natural order (founded on hierarchy, patriarchy, class and family) which sought to be the foundation of stability for any social order. These visual technologies drew explicitly upon values in sciences such as natural history, Darwinian evolution and primatology, as a means to produce or promote race, class and gender relations of a certain sort. Thus:

> "The spread of Darwin's ideas had helped to release nature into western society as a kind of heightened moral theatre. The natural world became a staging of many dramas (survival, advancement, extinction) and at the same time, in its intelligibility, an embodiment of the enormous moral, intellectual and economic beneficence to science (as womb to progress)" (Montgomery, 1993: 11).

Reinterpretations of nature ordered within scientific centres were also exported back to distant countries under colonialism. Zoological garden construction expanded rapidly in many overseas areas, as concurrently ordered cities, society and nature were created. For example, prominent citizens in the colonies of New South Wales, Victoria, Tasmania and South Australia felt moved by civic pride and political pressure to establish zoos in nascent capital cities, affording a sense of permanence, wealth and metropolitan identity. Zoological Society officers "seemed to have perceived the zoo as a space through which to confer not only colonial control, but also 'human' structure on the chaos of nature" (Anderson, 1995: 281-283). These cycles of accumulation of natural history, enabled institutions visually to dominate a world increasingly beyond the scope of everyday life. In this way, the situated discourses of natural history emerge into universalised knowledges. However, once established, networks also have to be maintained.

2.3.2. Inscription and the Emergence of Ethology

The practice of biology in 1859 was still linked to a private income. Thus knowledge production was not carried out in purely professional circles, and people on the fringes could make significant contributions through debates featured in the contemporary popular press. However, as outlined above, the ability to command increasing amounts of material in institutional centres and the creation of new research areas attracting new research funding, increased the professional and institutional focus of zoology. This institutionalisation, or the

continuation of cycles of accumulation is not, however, inevitably sustained. Over the twentieth century, the development of science has relied on enormous investments for its survival (Vernon: 1993: 207). Funding, and also the academic studies of the effects of funding, have tended to focus upon a scientific *avant garde*, and the development of new scientific fields. Equally, however, a lack of funding can strand those elements of science not perceived as within the trajectory of mainstream ideas. In the twentieth century, natural history was challenged by the rise of genetics whose experimental rigour devalued natural history's reliance upon description. Institutions were therefore required to redefine their activities in order to maintain their status, in ways that had implications for the associated scientists, animals and technologies; the relationship between the field and the laboratory; the visual and the narrative.

With the move towards funding priorities for biological experimental science within the laboratory, taxonomy was left behind in the middle years of this century (Vernon, 1993). Foucault's (1989) account of the development of the modern life sciences identifies a trend away from the visual tabulations and classifications of classical natural history, and their replacement with biology as a recognised field of inquiry. In this move towards genetics, molecular biology and experimentation, Foucault suggests that scientists were "abandoning the space of representation, [and] living beings took up their place in the specific depths of life" (1989: 345). For Foucault, the rhetoric of modern science located the essence of the living being precisely "in those elements most hidden from view" (1989: 268). I would query this assertion in two ways. Firstly, I will examine the complex relationship between *looking at* and *touching* nature: exploring instead the *expanding* biological gaze through techniques like x-ray crystallography which were vital to developments in genetics and the understanding of the structure of DNA. Secondly, I will consider the development of film as a new tool of inscription in the study of animal behaviour, which was important to the institutionalisation of ethology. In this way I want to suggest a new cycle of accumulation, whereby new fields of vision in biology were able to make links explicit between the abstract and the empirical in the life sciences.

In the 1940s and 1950s there were attempts to incorporate evolutionary issues more intimately and explicitly into taxonomy. Enabled by theoretical developments and new visual technologies, and impelled by the need to invigorate the funding of taxonomy, a new approach to taxonomy was created - evolutionary systematics (Vernon, 1993). Although taxonomy had been evolutionary since Darwin, in fact its practice still relied upon the visual identification of morphological forms. Those working in the field and in museums had to gain scientific legitimacy within an increasingly 'hard scientific' arena. A number of scientists, notably Julian Huxley in the UK and workers in the Natural History Museum New York such as Ernst Mayer and Sewall Wright, campaigned for cross-disciplinary work. Evolutionary systematics sought a new synthesis based around evolution and natural selection, redefining taxonomic issues as concerned with evolution, and applying itself to experiments on breeding and inborn behaviour

patterns which provided direct links between morphology, animal behaviour and genetics. The journal *Evolution* was set up and work shifted from qualitative description to increasing quantification, and from empirical generalisations to mechanical explanations.

Zoos had previously been the main source of animal behaviour studies. However, the new focus on the relationships between morphology and evolutionary theory heightened the importance of the links between habitat, animal behaviour and morphology. Julian Huxley revolutionised zoology by meticulous observation of birds in their natural habitat where these links could be made explicit (Bramwell, 1989: 41). Film contributed to this new approach as an excellent way of inscribing natural behaviour. The effect of film was to move descriptions of animal behaviour away from personal subjective accounts to a form of scientific representation. Mitman (1993) suggests the advent of 16mm film and more lightweight equipment such as the Akeley camera developed by Carl Akeley at the American Museum of Natural History meant that the study of ethology was: “no longer dependent upon notebook and pencil, the biologist or anthropologist could record movement and behaviours on a medium that could then be transported to the laboratory, where movements could be slowed down and behaviour analysed, spliced, and edited” (Mitman, 1993: 639). Film could move between the realism of the older natural history sciences and the more manipulative, technologically mediated strategies of experimental biology. In the States, an influx of films and ideas from continental ethnologists sparked a revival in naturalist field studies and a preoccupation with communication so that: "the use of film in the study of behaviour in both laboratory and natural settings had by the 1930s become commonplace” (Mitman, 1993: 639). Film was also an key component in the development of primatology, and the primate behaviour films of Clarence Ray Carpenter occupy an important position in Haraway's account of the discipline (Haraway, 1989).

Film's ability to inscribe animal behaviour not only made it an important actor in these new networks, film also further reconfigured the relationship between the subject and object within natural history. Lisa Cartwright has argued that film motion study in early twentieth century effectively subsumed the “sense based perceptions of an autonomous object” by rendering observation disembodied and dispersed (Cartwright, 1992). Film apparently removed the subjectivity previously assumed to have underpinned the interpretation of animal behaviour, and thus allowed the modest witnesses of science into this new arena of natural history. However, while new visual technologies enabled scientists to assert a more objective and distanced stance, the filming processes themselves introduced a new form of intervention in the natural world.

This argument has been developed by Evelyn Fox Keller in her an essay on molecular biology (Keller, 1996). Her starting point is the film version of the *Double Helix*, where Rosalind Franklin stands over an image of an x-ray photograph of DNA, uttering the words "I just want to look, I don't want to touch" (quoted in Keller, 1996: 107). In what Keller analyses as a twist

on the traditional feminist association of vision with distance and aggression, she suggests that "in scientific discourse, looking is associated with innocence, with the desire to understand, while touching implies intervention, manipulation and control" (Keller, 1996: 107). However, although Franklin is only *looking* at the basic building blocks of life, there is no way that any living matter could survive the imaging processes of x-ray crystallography, and the preparation involves a long processes of manipulation. Indeed, Keller goes on to suggest that it is only through the results of active manipulation at the genetic level that genes are able to gain an ontological status. In the words of Latour (1988) genetic material has to be made stable, mobile and combinable to be enrolled into the networks of biology. Keller summarises that "the history of the biological gaze has become increasingly and seemingly inevitably enmeshed in actual touching, in taking the object into hand, in trespassing on and transforming the everything we look at" (Keller, 1996: 108). In the current life sciences, technology merges looking and touching into an undifferentiable and united act.

The extension of this argument to the observations of ethology may be more subtle, but I want to suggest the same powerful links between experimental manipulation of animal behaviour and environment, scientific inscription on film, and the abstractions of evolutionary genetics are vital to the discipline. Ethology depends upon a range of means and tools to combine behavioural studies and genetics, looking and touching, and to link the behaviour in laboratory to the evolution of behavioural patterns within the environment. In allowing the mechanical approaches of science previously confined to the laboratory into the landscape, film enabled an explosion of field based research sites alongside more mechanistic descriptions of a range of animal behaviour. Mitman suggests that:

> “Technician, instrument, and body have become part of the extended psychological system of the twentieth century laboratory. Thus the incorporation of cinema as an investigative technology within natural history discipline's such as animal behaviour, have facilitated attempts to mirror more closely the idea of mechanical objectivity that has constituted the highly mediated world of twentieth century experimental life sciences” (Mitman, 1993: 640).

To some of its exponents, ethology also provided a new way of linking human and non-human animals, the natural sciences and the human sciences. This search for synthesis is still continuing. In his 1975 statement on sociobiology E. O. Wilson asserted that: "It may not be too much to say that socio-biology and the other social sciences, as well as the humanities, are the last branches of biology waiting to be included in the modern synthesis" (Wilson, 1975: 4). Wilson’s book is also an interesting illustration of the forms of scientific representation that are used when scientists are communicating outside their specialities. *Sociobiology* is positioned somewhere between a polemic, textbook and survey, designed to appeal to interested publics and other scientists, as well as communicating about behavioural ecology to biologists. Myers' article on the role played by various photographs, drawings, diagrams and graphs in relation to the text in Wilson book, illustrates how these function to link the popular and the scientific.

“The juxtaposition links pictures that have the authority of the everyday experiences to pictures that carry the authority of science” (Myers, 1990: 259). Myers compares this form of communication with the use of montage in film where the edited sequences of establishing long shot, contextual mid shots and detailed close-ups connect the theoretical to the empirical, and “the world of visible organisms and the unseen structures of information proposed in the theoretical model are seamlessly linked, literally in one line” (Myers, 1990: 261).

There are important overlaps between the use and form of film in science and the use and form of film in popular culture. Not only are scientific images of animals appropriated in popular culture, but animal behaviour films also draw from popular cinematic conventions. Both sets of representational practices are important in understanding how film became both a research took and a structuring metaphor for the direction and the production of animal behaviour research (Mitman, 1993: 641). Indeed individuals filming animals, whether defining themselves primarily as biologist, conservationist or film-maker, inhabit many worlds. The issue that I want to turn to now is how the animals themselves are defined and approached within science and how this differs from other arenas. The position of the same animals within different networks can affect considerations of animal welfare and assessments of what constituted 'natural' behaviour.

2.3.3. Negotiating the Position of Animals

Animals have long played a strong symbolic and material role within human culture, and there is a large literature on the particularly prominent position that animals have attained in Western culture from Victorian culture to the present (Ritvo, 1987; Berger, 1980; Serpell, 1996, Tester, 1991; MacKenzie, 1988, 1989; Tuan, 1994). Geographers have demonstrated the complex symbolic associations of animals within a variety of contexts: the different landscapes of the country and the city (Philo, 1995); the hunting and shooting practices of different classes (Matless, 1994); the establishment of ownership in African nature reserves (Neuman, 1995) and the aesthetic regimes of the colonial zoo (Anderson, 1995). Animals also emerge as important, yet often ambiguous, actors within the networks of science. They assume positions as objects: subject to different definitions dependent upon their position within networks and subject to different metaphorical interpretations, often involving dominance and difference. Animals can also be actors for they are sometimes able to negotiate or destabilise networks in which they are embedded. Haraway summarises the complex ways that animals are constituted by the symbolic and material discourses of science:

> "Organisms are biological embodiments; as natural-technical entities, they are not pre-existing plants, animals, protistes, within boundaries already established, and awaiting the right kind of instrument to note them correctly. Organisms emerge from a discursive process. Biology is a discourse, not the living world itself. But humans are not the only actors in the construction of the entities of any scientific discourse; machines [...] and other partners [...] are active constructors of natural scientific objects [..]. The siting/sighting of

> such entities is not about disengaged discovery, but about mutual and visually unequally structuring, about taking risks, about delegating competences" (Haraway, 1992: 298).

The two preceding sub-sections have explored the processes through which animals are inscribed in science when instituting an approach to natural history, and institutionalising ethology. I now want to examine the implications this has for the ways animals are constructed, represented and treated. Heterogeneous animals have been mobilised, stabilised and made combinable in different ways as they circulated through the networks of different disciplines. Latour calls this process *black-boxing*, and uses it to describe the accepted and closed categories of representation which are a function of any secure scientific paradigm (Latour, 1987: 2). One example of this may be the metaphor of the animal as a machine which characterised much early ethology and which conceives of animals as beings without conscious thought and responding in a predetermined way to external stimuli. Within any particular scientific network, black boxed objects are not examined, although these representations necessarily embody a range of social conventions. For example, Pavlov, who studied mechanical flex in animals, apparently fined co-workers who referred to the "intent" and "thought" of his laboratory animals. However, as his work developed, he himself had to alter his vocabulary to include a reflex of freedom and a reflex of goal (Krementsov and Todes, 1991: 76). These modifications enabled him to incorporate more data into his scientific programme but leave his basic suppositions unquestioned. Black-boxed representations therefore have great resilience, and are a fundamental part of the processes of doing normal science (Kuhn, 1970).

Mechanistic descriptions of animal behaviour are often contrasted with anthropomorphic descriptions. Whereas the former interprets animal behaviour on the basis of mechanical responses to external stimuli, the latter attributes consciousness to animals, often using human behaviour as a model. The literature is clear that each interpretative strategy contains dangers. For anthropomorphism, there is the danger of describing animal behaviour in terms that play on assumptions specific to the writer's culture, which in turn validates these assumptions as 'natural' in human culture by finding them in animal groups (Crowther, 1995: 128). Crowther focuses particularly on gendered behaviour to explore how biologists and scientific journalists have been brought up in the linguistic and cognitive tradition of patriarchy (for example using 'he' to refer to female animals) and perceive the primary material of their research in patriarchal terms. Wilson (1992), however, embraces the possibilities opened up by anthropomorphism for a more social understanding of nature. He suggests that "anthropomorphism can be a radical strategy in a culture like our own" where a mechanised view of nature has enabled it to be observed, managed and dominated, with the alienation and loneliness of humans as its price (Wilson, 1992: 129)[6].

[6]Latour has the following to say about anthropomorphism: "The expression anthropomorphism considerably underestimates our humanity. We should be talking about morphism. Morphism is the place where technomorphisms, zoomorphisms, phusimophisms, ideomorphisms, theomorphisms,

In this sub-section I want to explore further some of the critiques which have challenged the ways that animals have been represented, or black boxed within different scientific networks. I also want to introduce some work on scientific controversy to consider processes of negotiation before the black box closes. When the results of scientific research are under question, then the methods of science become more important. Through opening up the black boxed category of animals within different spheres, I want to look at how the different ways that animals are labelled and named can have different implications for the ways that they are treated, and how the practices enshrined within different black boxes can be opened up through critiques and scientific controversies. All of these questions draw attention to the varied roles that animals can play within the networks of science, the importance of different representations of animals for influencing the relationship between the material and the discursive, and reveal once more the ways ideas move between the laboratory and the research site. These will be further complicated in the networks of natural history films where animals are part of the networks of entertainment, as well as those of science.

In an article on the moral status of mice, Herzog (1988) identifies three different classes of mice in American research laboratories: these he labels 'good mice', 'bad mice' and 'feeders' (quoted in Serpell, 1996: 195). Good mice are the research animals who give their lives for the benefit of humans and human understanding. Their care and husbandry is regulated by official animal welfare guidelines, and their experimental uses are carefully scrutinised and vetted by the Institutional Animal Care and Uses Committees. Bad mice are essentially good mice that have gone feral. As soon as these mice hit the floor (literally), they experience an immediate loss of moral status. It is permissible to use any means to exterminate them, including techniques that would not be permitted as part of a scientific experiment. Finally, there are feeder mice who are bred and raised purely to serve as food for other laboratory animals, such as reptiles. So long as these mice are used for routine feeding, then no regulations apply. But if the feeding is part of a scientific study of, for example, predatory behaviour in snakes, the experiment will then be covered by the welfare committee, which will again prescribe how they may be treated. All of these mice belong to the same species and, having been bred in the laboratory, may even belong to the same genetic strain. However, it is possible to treat them with widely varying degrees of ethical detachment merely by assigning them different roles or labels. In addition, there are also examples of laboratory researchers who use animals in experiments, but who will sometimes single out one or two individuals and keep them as pets or mascots. They may develop strong attachment for these pets, give them names, and generally will not consider using them for research, although they will happily conduct experiments on their more anonymous counterparts (Arluke, 1988). By black boxing the animals into different

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sociomorphisms, pyschomorphisms, all come together. Their alliances and their exchanges, taken together are what defines the anthropos. A weaver of morphisms - isn't that enough of a definition" (Latour, 1993: 137).

categories, with different names and within different parts of the research area, their treatment can differ markedly. The guidelines and practices of animals care are, therefore, powerful positions from which to explore the social practices of science.

The relationship between naming animals and scientific research emerged as an issue within primatology research when the studies of Jane Goodall broke with convention, and reported her observations of chimpanzee behaviour with reference to named individuals rather than the traditional use of the terms such as 'alpha male'. A great deal of feminist biological research has been in the field of primatology. This is an area where research is obviously as much about interrogating what it means to be human, as it is about interpreting the meaning of animal behaviour. The use of human names, or anthropomorphised names, demonstrates that researchers such as Jane Goodall, Biruté Galdikas and Diane Fossey are not working with the traditional metaphor of animals black boxed as machine, but are prepared to work from assumptions of sameness, and close affiliation. Haraway describes primatology as "a complex scientific construction of self and other, culture and nature, gender and sex, human and animal, purpose and resource, actor and acted upon" (Haraway, 1988: 82). Thus, by the apparently simple act of naming animals, feminist primatologists are challenging the patriarchal construction of dualities. New questions in ethology emerge from this feminised anthropomorphism: the role of post reproductive individuals, the ageing process, and the position of infertile members of communities. These are questions outside the focus on the continuation of the male line in genetics. Haraway reports that: "field primatologists are particularly aware of and troubled by the patent differences in the primatologies authored by men or women, Japanese or Dutch national, British ethologists, or North American physical anthropologists" (Haraway, 1988: 79). By naming animals, these women challenges the objectivity and neutrality of rational science based upon animals as machines and stresses the interpretative nature of ethological study - an approach that is now gaining wider acceptance.

Feminist scholars of science have also studied how training in the orthodoxy of scientific discourse contributes to the black boxing of certain approaches to animals. Opening up the practices of science stresses the ethical discourses of science as well as the academic. Lynda Birke (1991), for example, argues that school children undergo a process of desensitisation in biology courses, with the result that many girls, already socialised to be more sensitive than boys, are put off advanced biological training. The process is exacerbated by the procedures and ethos of experimental laboratories where it is considered important 'not to let your emotions get in the way'. She asserts that: "objective detachment is [...] stereotypically masculine in our culture [...] To identify with animals (a more 'feminine' position) is to cease to be objective" (quoted in Crowther 1995: 136-137). This is usually evident in the writing of scientific papers which emphasises detachment from the practices of researching animals through the absence of personal details of the care of animals, and characteristic passive voice. In an analysis that echoes the presentation of science on television, Collins and Pinch suggest

that it is the "absence of these discussions which makes science look like a special activity and scientists merely mediators or passive observers of nature" (Collins and Pinch, 1993: 115).

When the results of science are controversial - before the black box is closed - or when the results cannot be interpreted by conventional assumptions, the practices of science emerge as a key participant in the debates. Using an example from the study of ethology, Collins and Pinch (1993) report the controversial work of David Crews, a professor of zoology and psychology, whose work looks at how environmental factors influence the evolution and development of reproduction. Crews makes links across the observatory science of natural history and the more mechanical neuroendocrinology, with the result that interpretation of his observations do not fit neatly into a received model of animal behaviour. For example, Crews' research on the sex life of the whip tail lizard is still unresolved after 5 years of discussion in the scientific press. The central question revolves around the purpose of same-sex mounting behaviour observed in parthenogenetic female lizards (lizards who reproduce from eggs of the female without the male to fertilise them). The key question "do cremidophorus lizard exhibit pseudo-copulatory behaviour which is relevant to their reproduction" has still to be answered (Collins and Pinch, 1993: 118).

As the debate has progressed in the academic journals, research papers have focused more and more upon the methods of observation, and the place of observation, and what relationship can be assumed between the animals in the controlled conditions of the laboratory and the animals in the wild. Large parts of each paper submitted by Crews and his critics covers the "regime of care" and the "skills and competence of observation" (Collins and Pinch, 1993: 111), covering such usually obscure topics as where the animals are kept, who cared for them, how many animals were kept in each cage, what the temperature and food conditions were like and how where they observed. Crews has backed up his arguments with assertions of his skills as a scientist; his observation skills which enable him to spot previously unrecorded behaviour. His critics however, have also cited the care of their observations, to argue that same-sex mounting is irrelevant behaviour which is merely a function of the conditions in the laboratory. The crux of argument pivots around what is 'natural' lizard behaviour, and what is a function of methods of observation through keeping animals in the laboratory. Whilst his critics point to the fact that this behaviour has never been seen in the field, Crews argues that this makes the laboratory research even more important, for these are shy lizards who are rarely seen in the wild at all. The story told by Collins and Pinch (1993) ends at an impasse. There is seen as no way of judging between the different interpretations of behaviour. The whole controversy raises important questions about the different ways that animals can be represented, the relationship between looking and touching, the situatedness of scientific facts and the uncertain relationship between the laboratory and the field. Far from the certainties of television science, we have reached a point of irresolvable uncertainty in the processes of science, where what is natural cannot be purified from the modern hybrids. In section 2.4. I want therefore to recap briefly,

and use these ideas to introduce the key questions in the empirical chapters, through which I explore the processes of purification and translation, as well as the key points of tension, within natural history film-making.

2.4. Part IV: "Doing Natural History Film-Making"

In this final section I want to extend work in science studies, by using it to re-examine natural history film-making. Having introduced the section on science through the scientific underpinnings of the documentary image, I want to use these insights on the practices of science to re-examine the processes of doing television. The introduction to this chapter outlined approaches to the study of science and the media, struggling to overcome a series of binary oppositions between facts and values, expert and lay, nature and culture, science and the media. I argue instead for an approach that uses the vocabulary of Latour to destabilise these binaries and to focus on the shifting relationships between the heterogeneous actors and entities of science and the media involved in the development of natural history film-making. The value of Latour's approach to the questions that I want to ask takes several forms.

Firstly, Latour's ideas on agency allow a consideration of the enrolment of diverse actors and entities into the networks of natural history film-making. Secondly, ideas about purification emphasise the narrative processes involved in doing science and television, and the ways that these are both institutionalised and naturalised in the representations of blue-chip natural history films. Notions of enrolment draw attention to the moments and places of inscription of both science and film-making, and the different ways that animals are enrolled into network where their actions can be made stable, mobile and combinable. And, finally, the processes of translation point to the ability of both science and television to act over space from strategic centres. The concepts of science and the media, as well as the relationship between them, can therefore be re-examined, not as *a priori* universal categories, but as ongoing processes, enrolling varied entities, actors and locations through strategic centres in the achievement of longer networks. I want to use these insights to examine the attempts of the BBC's Natural History Unit to create a stable genre of natural history film-making, through the establishment, extension and maintenance of the heterogeneous actor networks of the NHU.

This is, of course, not an unfamiliar area for media studies. Media studies, along with geography and sociology, is increasingly positioning flows of information and the organisations of modern communication systems as central to contemporary changes in time, space, identity and the public sphere (Murdock, 1993; Lash and Urry, 1994; Silverstone, 1994; Morley and Robins, 1995). Morley and Robins indicate the implications of these changes to the geographies of communication, image and information flow, and the way that they reconfigure space and place.

> "Significant transformations are now occurring in the information and communications media as a consequence of new forms of delivery. We are seeing the restructuring of information and image spaces and the production of a new communications geography, characterised by global networks and an international space of information flows; by an increasing crisis of the national sphere; and by new forms of regional and local activity. Our sense of space and place are all being significantly reconfigured" (Morley and Robins, 1995: 1).

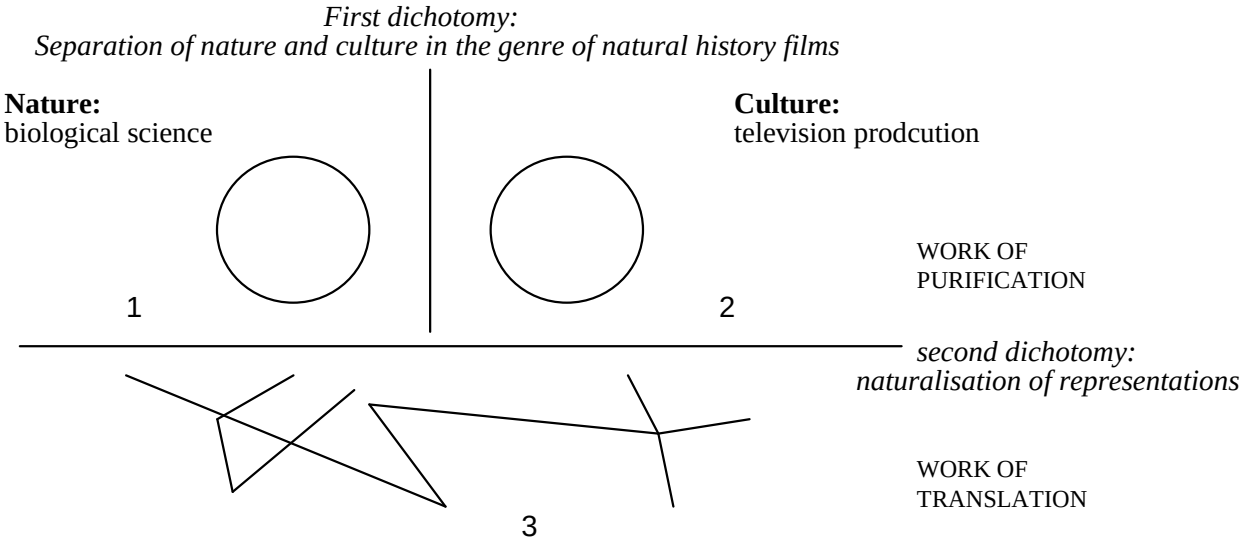
My interest is in the way that they reconfigure nature.

This approach increases the importance attributed to the contextual histories of media forms, organisations and technologies which has a precedent in the work of Raymond Williams in *Television, Technology and Cultural Form* (1990, first edition 1975). Williams' book stresses the complexity of the development of television communications, and its linkages with other technological, ideological and aesthetic forms. Moving from a technologically determined account of the development of television towards a more complicated notion of determinism itself, Williams stresses that: "the invention of television was no single event or series of events. It depended on a complex of inventions and developments in electricity, telegraphy, photography and motion pictures, and radio" (Williams, 1990: 14). From this complex of associated technologies Williams identifies two strands of research and development, both made with other ends primarily in view, that were combined in the development of television. The first is the broad area of communication over space. With the development of new industries, the expansion of trading empires and railways, a new group of technologies that included telegraphy, the telephone and subsequently radio, were both possible and profitable. The second sphere is the introduction of new methods of framing and recording the world, particularly the visual world. This range of technologies is perhaps more complex, for it not only includes the development of still photography and then moving pictures, but also a culture in which changing aesthetic values and social relations granted value to such commodities as family portraits, records of possessions, landscape images, and newspaper reports.

I want to use these dual strands of television development suggested by Williams to explore parallels between the two elements of translation suggested by actor network theory in this thesis. Firstly, William's emphasis upon ways of framing the world within television has resonances with the processes of inscription within science. Both draw attention to the realist aesthetics of both science and the media, the importance of witness in science and presence in media, the role of technology, and the processes through which vision is associated with truth. Secondly, Williams' emphasis upon communication over space introduces the ability of both science and media to claim authority to represent animals, people and other entities dispersed in time and space from strategic centres. This focuses upon the ability of organisations to mobilise and standardise entities over space, ranging from biological organisms, film copyright, to audience measures. These dynamic processes of television are countered by the importance of genre and convention in television. Genre studies has focused upon the importance of shared

conventions and stable associations to bring together the conditions of production, the text and the consumers (Barker, 1989). I want to suggest that successful genres can be seen as stable actor networks, where the ability of a centre to represent, define and control entities is largely successful and uncontested.

I have outlined some of the characteristics of the natural history genre at the BBC in the first chapter of the thesis: its high production values, its reliance upon scientific understandings of animal behaviour and its problems with representing environmental issues in favour of images of nature in the raw. These can be seen as the contribution of natural history films to processes of purification. In this chapter I have demonstrated some of the complex spatial and representational processes involved in the construction of the hybrid forms of science and natural history. These are the positions of natural history film-making within the networks of translation. I have indicated some of the processes of doing science and doing television through which the separation between the representations within the genre of blue-chip films and complexities of the film-making process are achieved. These processes are illustrated above in Figure 2.2. In order to fully understand these processes Latour suggests that: "The double separation is what we have to reconstruct: the separation between humans and non-humans on the one hand and between what happens above the line and what happens below on the other" (Latour, 1993: 13).



The Networks of Natural History Film-Making

Flows of information and entities over space translated through nodes of inscription and organisation

Figure 2.2 The Processes of Purification and Translation in Natural History Films
(adapted from Latour, 1993: 11)

This is the aim of the thesis: to reconstruct this double separation between nature and culture as seen in the genre of blue-chip natural history film-making; and the practices of science and media production through which these division are reproduced. I want to approach this historically, using Latour's vocabulary to reconstruct the actor networks of the Natural History Unit. The theoretical approach I suggest is a form of actor network theory, expanded from science studies through an engagement with the geographies and histories of science. The potential offered by actor network theory seems productive. It offers an account of the processes of doing natural history television which involves not only social actors, but also the institutional forms, technologies, animals and environments that have been so important throughout its history. Actor network theory draws attention to the representational and spatial elements of the important processes of natural history film-making: processes defining knowledge, inscribing animals, institutionalising expertise, constructing authority, claiming audiences and representing nature. It offers different perspectives on agency and power, which are valuable when approaching the large, and often monolithic categories of science, nature and the media. Actor network theory instead outlines an approach to action-in-context which looks at how universals are constructed, how difference is destroyed and how power emerges as actors attempt to enrol others to their representations, interests or aims. The dispersed notion of power can be used to suggest a different geography of media effects, examined through every node of the network, rather than just at the point of consumption. This opens up new spaces for intervention in the processes of natural history film-making, spaces which are points of constant negotiations by the film-makers themselves. The preceding discussion has been theoretical and often abstract and it is worth reiterating that networks are constantly enacted and in motion.

Actor Network Theory, therefore, offers a potentially powerful way to reconnect the purifications in the genre of blue-chip natural history film-making with the complex translations required to construct this hybrid form of programme making. By recounting the unspoken histories of natural history film-making, it offers answers to the question posed by Silverstone in the introduction: "Somehow it all seems so natural. And why not?" (Silverstone, 1986a: 9). At each stage of its history, the Natural History Unit faces constraints and choices over the subjects, stories and styles of films that it produces. I want to formalise these challenges and opportunities in the specific research questions outlined below. These questions explore the changing processes through which the Natural History Unit is able to construct and maintain the networks of natural history film-making, and its implications for reconfiguring the popular geographies of nature.

1. <u>How is nature incorporated into the networks of cultural and social relations within the Natural History Unit throughout its history?</u>
    - Where are the different sites of inscription from the studio and zoo to the research site?

- What are the changing methods of filming or inscribing animals into the network?
- What narratives are the images embedded in, and how do these support the authority of the images?

2. <u>How are programmes produced by the Natural History Unit able to achieve the status of universal representations?</u>
    - What are the geometric translations involved through which images are able to move away from the point of inscription?
    - How are audiences dispersed in time and space incorporated to support the continuation of natural history film-making?
    - What linguistic translations are involved in the transition from science to natural history films?
    - How does this way of representing nature impact upon the places where animals are enrolled?

3. <u>What are the processes through which the Natural History Unit creates and maintains the networks?</u>
    - Who is granted the ability to speak for the network?
    - How does power become concentrated and responsibility dispersed through the network?
    - How are these institutional networks negotiated by those individuals involved in Natural History Unit, and what are the processes through which individuals gain representation?
    - What voices are the excluded from these networks?
    - What are the points of contestation and controversy in the networks?
    - How does the network maintain momentum within an ever changing media environment?

These questions provide a framework for approaching the historical development of the Natural History Unit and for understanding the complex negotiations involved in the popularisation of natural history. However, before attempting to answer these questions I want to explore the methodological propositions that ANT suggests for reconstructing the dual separations of *doing* television science. Whilst my engagement with the work of Latour has arisen out of a desire to extend contemporary geographical debates on the social construction of nature; the methodological problems I encountered attempting to follow actors as they create their own realities highlight the value of geographical expertise in carrying out qualitative research.

III
Researching the Networks of Natural History Film-Making

> "What will we talk about? Which actors will we begin with? What intention and what interests will we attribute to them?" (Latour, 1988: 9).

3.1. Introduction: Networks and Research Methods

This chapter tells the story of the research. Jensen suggests that methodology "represents a heuristic or mode of enquiry", one that is at the "juncture between concrete acts and tools of analysis (methods) and overarching frames of interpretation (theory)" (Jensen, 1991: 6). The aim of the chapter is to explore the methodological implications of adopting an actor network approach to studying natural history films, and to explain the concrete strategies through which this was carried out. Firstly, I introduce characteristics of qualitative research as they apply to the study of actor networks. There is a limited literature on the methodologies of actor network theory (ANT), which I hope to supplement with qualitative work from geography and media studies. The experience of geography and media studies in qualitative research raise important *practical* issues for the study of actor worlds and *theoretical* questions for constructing narrative accounts of actor networks. I want to explore the extent to which qualitative case studies within geography and media studies problematise the politics of research practice as suggested by actor network theory, and suggest that their attention to methods of interpretation can be used to question the politics of representation within the narrative accounts of ANT.

In putting together a mode of enquiry that guides the practicalities of research and interpretation in the thesis, I am keen to retain the analytical power of the non-hierarchical approach of actor network theory, whilst also acknowledging the politics inherent in complex research processes and the problems of representing diversity and difference within the narrative form of ANT. This is an apparently contradictory aim: looking to level difference at the outset of analysis through a symmetrical approach, yet also appreciating the politics of power and position that influenced research. This contradiction has implications for the aims of ANT, which are addressed in feminist engagements with science studies. This contradiction is also the focus of John Law's call for a 'modest sociology' (1994); one that is not a search for order, but tells stories about processes of ordering, aware of their production context, and the extent of their claims.

This chapter introduces an engagement between actor network theory and other qualitative research methods in three sections. Firstly, I outline the broad experience of geography in working with qualitative research methods in comparison to limited literature within ANT. Secondly, I explore the methodological issues of case study research and the practicalities of researching within media organisations as they are presented by both ANT and media

ethnographies. And finally, I explore the methods of interpretation and narratives constructed by ANT, in the light of recent discussions of academic interpretation emerging within a more general crisis of representation, as well as within specific feminist critiques of ANT.

The second part of the chapter then introduces the concrete tool of research and analysis: outlining the processes involved in finding and gaining access to the field; following the actors and finding the stories; analysing and managing the materials. These apparently mundane and often overlooked issues of carrying out research, are in fact the concrete strategies through which the researcher endeavours to "capture the complexity of the reality we study, and [...] to make convincing sense of it" (Strauss, 1987: 10). The research involved several cycles through the material and followed several related stories throughout the four years of the PhD, with ten months intensive research at the Natural History. These stories were located within wildlife film-making conferences, through research and participant observation at the library of the NHU, through participant observation on a British magazine programme, and through semi-structured interviews with film-makers. Practically, the search for each of these stories involved issues of access and identification, establishing and maintaining relationships, and managing different types of data. Analytically, these stories trace the paths of individuals careers, the cycles of television production, the changing identity of the BBC, the structural changes in television, the differing relationships to science, the shifts in animal ethics and environmental awareness and different ways of speaking for the audience. Theoretically, this search for stories introduces an approach to the empirical material which is not searching for one definitive explanation of the operation of the wildlife film-making world, or one way of describing history, but is concerned to capture and make sense of its complexity. The methodological limitations of ANT literature means that these methods owe as much to the 'modest sociology' of Law (1994) as they do to the theoretical analyses of Latour (1993). The huge scope of ANT means that the route I followed was not the only possible way through the material, and I hope to clarify the reasons for my selections in this chapter.

3.2. Qualitative Analysis and the Politics of Research

Actor network theory clearly implies a form of qualitative analysis. Qualitative approaches examine how groups, organisations, individuals or texts are involved in processes of generating meanings, which are contextualised and inextricably integrated within wider social and cultural practices. Often crudely compared to quantitative methods, they offer different explanations to questions that cannot be answered through recourse to the statistical analysis of questionnaires, interviews, and texts[7]. The numerical methods of quantitative analyses are not suitable media

[7]The different questions asked by quantitative and qualitative research have different ramifications for the representativeness of a study. McCracken suggests that: "the purpose of the qualitative interview is not to discover how many, and what kinds of, people share a certain characteristic. It is to gain access to the cultural categories and assumptions according to which any culture construes the world" (McCracken, 1988: 17). The number of interviews carried out for a legitimate enquiry is not therefore concerned with

for discovering the ways that people draw connections between the texts, technologies, organisations, people and places through which they negotiate the processes of film-making, nor analysing the accounts that they give of these actions. There are a wide variety of qualitative research methods, such as participant observation, in-depth groups, oral histories or semi-structured interviews, which all aim to explore the realities of everyday lives as they are experienced and explained by the people who live them (Burgess et al, 1988a): "stories they tell themselves about themselves" (Geertz, 1973: 448). The choice of method depends upon the resources of the researcher, the research questions and the structure of the community under study. In this study I used a mixture of participant observation, archive research and semi-structured interviews in order gain understanding and insight into the cultural contexts and individual perspectives on natural history film-making.

Qualitative research is concerned with language as a process through which shared meanings are constructed, whether emerging within groups situations, explored in one to one interviews or analysed within texts. Qualitative analyses of the texts of both documents and interview transcripts explore the codes through which meanings are communicated, and how these meanings are generated within specific cultural contexts. Qualitative research therefore yields rich and complex linguistic data in which subjective experience and social action are 'grounded' in the contexts of both time and place (Strauss, 1987; Burgess, 1982, 1984). Analysis of this data aims to capture and interpret this complexity, and requires the analyst to "pick his or her way through the piled up structures of inference and implication which constitute the discourses of everyday exchange" (Geertz, 1973: 182). Geertz calls the accounts that result from these analyses 'thick descriptions'. Qualitative methods tend to use case studies, work with a variety of research materials and methods, stress how meanings are constructed and transformed within varied contexts, and use this analysis to abstract theory from empirically grounded accounts. There are therefore many parallels with the theoretical aims of actor network theory.

Qualitative research now has an extensive and reflexive use within cultural geography (see for example Eyles and Smith, 1988). The interest in qualitative methodologies has grown since the early 1980s and has yielded impressive empirical material from participant observation (Jackson, 1985; Crang, 1994), in-depth groups and focus groups (Burgess et al, 1988a, 1988b; Kneale, 1995) and interviews involving elites and non-elites (for example, McDowell, 1993; Herod, 1993). This material now covers a range of topics exploring how individuals and groups negotiate shared meanings and individual identities, within heterogeneous communities and through varied resources such as texts, work, leisure and the other experiences forming the textures of everyday life. These accounts often feature voices of people previously silenced within academic explanations. The privileged perspective of the academic can therefore be

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achieving a statistical representative sample, but in glimpsing the complicated character, organisation and logic of a particular culture.

used to incorporate positions of class, race, gender or sexuality excluded from representation in mainstream debate, as well as providing commentaries upon the actions of elites.

The often political intentions of pursuing this form of research means that there is also an extensive literature on the principles of carrying out qualitative research (Burgess et al, 1988a), on the interpretation of qualitative data (Pile, 1991) and on writing ethnographic accounts (Crang, 1992). This methodological literature demonstrates the value as well as the problems of a research methodology concerned with "gaining access to the conceptual world's in which are subjects live" (Geertz, 1973 - quoted in Burgess et al, 1988a: 320). While the empirical details of qualitative research seek to present accounts of the world as viewed by others, geographers have increasingly been concerned with the double hermeneutic involved in this form of research. This draws attention to the problems of researching and then speaking for others through ethnographic narratives, which are themselves constructed for particular ends in particular contexts (Keith, 1992; Nast, 1994). This is a complex academic and political issue whose significance is disputed, but whose substance demonstrates the extent to which researcher and researched are both positioned and affected by a number of individual and institutional frameworks. This has implications both for the practices of carrying out research and for the politics of subsequently representing this material, and also offers a number of significant challenges to the assumptions of actor network theory.

There are parallels between existing qualitative research in geography and media studies, and the aims of actor network theory. Both give emphasis to language and experiences as constitutive of social practices and institutions. Within the vocabularies commonly used there are also parallels. Qualitative methodologies talk about the search for shared meanings; ANT puts this in terms of translation and the construction of networks. Qualitative methodologies highlight the importance of the contextual nature of these meanings within organisations or groups; ANT talks about the constitution of actor worlds. Both present an analysis that is concerned with talk and texts in action and with language as practice. They both also give renewed theoretical importance to the case study and the relationship between theoretical enquiry and detailed empirical research. However, ANT and other qualitative work give different emphases to methodological issues. Research practices and politics are increasingly the subject to attention in geography, whilst they are still relatively ignored by the best know proponents of actor network theory, such as Latour.

Actor network theory has tended to be unspecific or unclear about the details of its approaches (Latour, 1988; Latour, 1993). There are critics of this ambiguity, but they have yet to garner the attention of the main statements of actor network theory such as *We have never been Modern* (Latour, 1993). The work of Star (1992), Singleton (1993), Wynne (1992), Law (1994) and Haraway (1997) do look more reflexively at the practices and narratives through which actor worlds are reconstructed, and I want to explore these further in this chapter. It is no doubt

clear that I am sympathetic to the descriptive power of non-dualistic approaches like actor network theory, and I find the deceptively simple idea of following actors as they make networks an appealing approach to understanding the hybrid forms and complex histories of natural history film-making. However, I find its methodological propositions inadequate guidance for carrying out research, and the critiques pertinent to issues of interpreting research.

In response to his questions: "What will we talk about? Which actors will we begin with? What intention and what interests will we attribute to them?", Latour offers the following answer:

> "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 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 qualities, 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 actor 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).

Latour implies we can start from a position of ignorance, at an unspecified point and merely follow the transformations. Murdoch (1994) outlines his interpretation of the methodological position of actor network theory in the following way: "We let them [the actors] show us where to look, what material they use in the course of network construction and how they come to be related to others. In short we get them to do as much work as possible for us" (Murdoch, 1994: 23). I would suggest however that this modesty is disingenuous: How do we know where they are telling us to look without knowing their vocabulary? How do we understand the significance of their materials without using existing categories? How do we understand their relationships without drawing on prior experiences? And, perhaps most reasonably, how do you get an immensely busy community of people to do your work for you?

These issues are not merely practical but have profound theoretical implications for a methodology that aims to go in to the field from a position of agnosticism, with no *a priori* categories, and having theoretically levelled difference between subject and object, self and other. During the processes of doing fieldwork the issues of access, power relations and interpretation all forcefully reassert these differences. In the rest of this chapter I want to suggest that the assumptions of initial ignorance, questions of where to start and who to follow are not as self evident as Latour suggests. It is not enough just to begin at a point - any point. As Donna Haraway makes clear: "Where to begin, and where to be based are the fundamental questions in a world in which power is about whose metaphor brings the world together" (Haraway, 1997: 39). There will always be influences over the interpretations we give to people's interests and intentions, and there are necessarily choices over whose narratives we reconstruct. The stories that we tell are not inevitable, nor the only ones that could be told.

Firstly, I explore these issues in relation to case studies used in actor network theory, geography and media studies, looking at how case studies involve power hierarchies between researcher and researched, and how each interpretation offers only one path through this complexity. Secondly, I examine the ways that these disciplines approach the analysis of qualitative data through discourses analysis. This textual analysis can be extended to an analysis of the narratives that actor network theory itself produces, the way that it constructs the subjects of its enquiry and the ways it deals with difference. Finally, in the light of these discussions, I want to tell the story of this research.

3.3. Case Studies and Production Ethnographies

The case study is currently the commonest form of actor network theory; focusing initially upon the production of knowledge within laboratories and research organisations (Latour, 1987; Law, 1994); moving on to explore the institutionalisation of discourses within government institutions and economic organisations (Hinchliffe, 1996; Latour, 1996); and beginning to look at the consumption of science within farming and conservation (Clark, 1994; Wynne, 1996). Murdoch suggests this focus on case studies emerges from the "need for a methodological approach that allows access to the dynamics of the social context and the processes of network building. The most applicable method is the case study, in which a particular event or sequence of events can be explored in depth" (Murdoch, 1994: 22). For ANT the case study provides the connection between the detailed empirical work required to exhibit the network in action and the theoretical framework in which this is interpreted. This view of case studies is similar to that of Mitchell (1983) who defines the case study as the documentation of some particular phenomenon or set of events that has been assembled with the explicit aim of drawing theoretical conclusions. It is also similar to the ways that case studies have been used in geography and media studies. The literature on working in media institutions has been particularly valuable in guiding the practicalities of carrying out research within the BBC.

There is an established history in media studies of using case studies of production contexts to examine the construction of media representations (for example the Glasgow Media Group, 1976; Schlesinger, 1978; Hall et al, 1978; Silverstone, 1985). These ethnographic accounts of production contexts explore the ideological significance of the methods used to process news, exploring how it is that media professionals come to know what they know, and the rules, codes and shared meanings through which organisations define facts. These studies examine news organisations as complex systems to seek how news comes to support official interpretations of controversial events; focusing on racism (Hall et al, 1978), Northern Ireland (Schlesinger, 1978), and anti unionism (the Glasgow Media Group, 1976). This work makes direct links between the meanings within texts and communicative contexts and uses participant observation to identity these relationships.

Production ethnographies also link micro level creativity and macro forces influencing production, and are thus a powerful way of exploring the functioning of organisations (Jensen and Jankowski, 1991: 75). Cantor (1971) examined the role of one level within the industry, the Hollywood producer, in a traditional model of occupational sociological research; Elliott (1972) focused upon the creativity of individual producers working within a mass communications organisation; and Gitlin (1983) used numerous interviews to present multiple perspectives of professional participants, examining points of conflict and contradiction, and offering a dynamic and fluctuating picture of the construction of prime time television. Newcomb (1991) suggests that production studies must consider questions in at least five major categories. The *cultural*, which is the position of television in relation to other cultural industries; the *institutional*, which refers to the public service or commercial position of the organisation under study; the *organisational* referring to the hierarchies and departmental functioning of the organisation; the *group* - the established work routines at the levels of programme making, and the *individual* acting within all these contexts. In common with contemporary analysis of organisations and with the assumptions of actor network theory, these categories are fluid and organisations are seen as always in action. Production studies tend to follow case studies through a limited time period, tracing the choices made, the points of power and influence, through to the final product. The difference of actor network theory is that it seeks to find a point before these points of power and influence are established and categories cemented, and so tends to seek a longer term perspective.

In ANT the case study binds the empirical work to a particular place, organisation or event whose dynamics and contexts can be explored in detail, without the overwhelming complexity that would otherwise have to be addressed. Without this grounding actor network theory would clearly be unworkable. Murdoch does in fact suggest it is still impossible to follow actors everywhere and that networks often have to be reconstructed retrospectively (Murdoch, 1994: 22). Histories of organisations, events and processes are used to follow the transformations of actors and entities in the construction of networks. These histories look back to a point prior to the stabilisation of the network, to find a point before the black box was closed. In this way the contemporary order within a network is not treated as a given, but as the historical outcome of many different and negotiated processes of ordering (Law, 1994). ANT therefore aims to extends many of the characteristics of production ethnographies retrospectively, which allows the extensive literature on production studies to act as guides to practical issues.

The very practical issues of how to follow actors are, ironically, often absent from a literature whose very focus is upon the processes of knowledge making. With the exception of the work of John Law (1994), I have looked instead at these production ethnographies for practical support (for a summary of these issues see Newcomb, 1991). Researching within an institution like the BBC involves a number of issues that Law (1994) in particular addresses. These

include gaining access to organisations, carrying out interviews with elites, methods of recording and analysing data, and negotiating the position between the researcher and the researched. Access into any organisation can be notoriously difficult. Individuals are busy, involved in specific tasks in particular areas, and organisations have an established way of operating that does not easily incorporate additional academic observers. On the other hand people are often enthusiastic to communicate about their work, given the time and a suitable forum.

One thing that emerges from many media ethnographies is that you need prior knowledge in order to be able to gain access to these communities. These ethnographies talk about the time and effort required to approach groups, the importance of prior understanding of people's roles, the necessity of thorough preparation, and the advantage of prior links. Professionals do not have time to teach and a researcher must have a high level of knowledge going in (Newcomb, 1991: 100). Rather than an approaching from a position of ignorance, access requires specific knowledge of practices, professional organisations and technical matters (Newcomb, 1991: 99). Moreover, access to organisations is still only superficial because access to each individual has to be separately negotiated. Some actors will therefore be easier to follow than others, and this may well depend upon the levels of prior knowledge in different areas. This is something that Law explicitly acknowledges in his focus upon the level of managers within the Daresbury laboratory (Law, 1994).

There are also issues involved in conducting interviews which result in a more complex relationship between the analyst and the subject than Latour's prescription for the "equal status for those who explain and those who are explained" (Latour, 1988: 175). Most of the commentaries on the politics of carrying out qualitative interviews have focused upon how to empower subjects through a hierarchical interview process in which the interviewer is seen as holding the power (Nast, 1994). This work has questioned how the relational qualities between researcher and researched inevitably inform research agendas and knowledge claims. Similar issues of hierarchical relations emerge when interviewing elites. The notion of an elite itself is clearly fluid, and there will be complicated relational qualities within each interview over access, language, gender, age, background and agenda, as well as subsequent ones over interpretation. As a young woman researcher, currently working within cultural geography, approaching an institution whose composition had been historically predominantly male and drawn from the natural sciences, yet which now had a large proportion of young women researchers and television experience; questions of gender, age, expertise and status clearly cut across my relationships with many individuals, influencing the way I approached and responded to different people.

The people I followed, and the way I did this, were also influenced by the way the original research had been framed in terms of the representation of environmental issues on the

television. This starting point can obviously not be forgotten nor, I suggest, should it. Despite the call to approach each case study from a position of agnosticism, every individual will bring different skills, interests and concerns to a study which are better acknowledged than omitted. These are well rehearsed issues in geography over "how our work affects and is affected by the communities and places we study, and how immersion in particular cultural frameworks and academic and theoretical traditions informs research goals and methods" (Nast, 1994: 54). Nast adds that "these questions are particularly pertinent to field oriented research where researcher and researched directly interact in relationships that tend to be periodic, short and intense" (Nast, 1994: 54).

The work from feminist methodologies in particular has suggested that the field itself can never be non-hierarchical, and ANT has been criticised by feminist scholars of science precisely for its non-dualistic approach, which denies the historical association of women with the other (Singleton, 1993; Star, 1992). Focusing upon the politics of carrying out research and interpretation, feminist research suggests that "realising that our methodologies shape and are shaped by the political context and scale of a field means that particular qualitative methods cannot be idealised in and of themselves and that we cannot ever create and work with perfectly non-hierarchical regimes" (Nast, 1994: 59-60). Dualities cannot be levelled as the field itself is always politically situated, contextualised and defined, and its social, political and spatial boundaries shift with changing circumstances. ANT does acknowledges that its texts are hybrid - or partially derived from the actors that we study (Murdoch, 1994: 23) However, relatively little attention has been given to those parts of the texts that, despite protestations of agnosticism and equality, will inevitably reflect the interests and position of the researcher. There is, however, more attention to the methods through which stories emerge from the actors under study, through the means of discourse analysis.

3.4. Discourse Analysis and the Narratives of Actor Network Theory

The term 'discourse analysis' is complex and disputed, and has a range of interpretations across sociology, psychology and science studies. What they have in common is the analysis of the content and context of language in action through talk and texts in situ. Discursive acts can be fashioned within particular institutional terrains (the media, science or planning, for example) and shaped through cultural connections, and narratives or structures of representation (new broadcasts, scientific papers and policy documents, for example). Within Science Studies discourse analyses have been used productively to explore relationships between content and context, looking at how scientists construct their tasks and display their acts as rational and warrantable in any particular setting (Mulkay, 1984; Mulkay, 1985; Potter, 1984; Woolgar, 1976). The focus of this discourse analysis is upon how sociological and linguistic processes support claims to create rational meaning. Rhetoric is examined not for how it corresponds to some putative reality, but on how different rhetorics compete: what they draw upon to support

their claims, what actors they use and how they represent these. For example, Shapin has looked at the processes in Eighteenth century science by which knowledge and associated behaviours are established as the basis for standardised collective reference and action (Shapin, 1980).

Discourse analysis in science studies is also concerned with the resources through which discourse is enacted. As well as a range of narratives, rhetorics, and institutional mythologies, discourse analysis also examines the use of texts, technologies and instruments which can be used to support claims to generate meaning. Potter and Wetherall summarise the approach taken by science studies to discourse analysis as follows:

> "People perform actions of different kinds through their talk and their writing, and they accomplish the nature of these actions partly through constructing their discourse out of a range of styles, linguistic resources and historical devices. One of the principal aims of discourse analysis is to reveal the operation of these constructive processes" (Potter and Wetherall, 1994: 48).

Latour uses a similar vocabulary to explore the construction of actor networks. Analysis of processes through which actors create shared meanings, constructing discourse through a range of resources and thus forging actor networks, shares similarities with these forms of discourse analysis. The difference is the historical scale and scope at which it is attempted.

> "The method I use here consists simply in following all these translations, drift and diversions as they are made by the writers of the period. Despite my search for complication I could find no more than this simple method. Semiotics provides me with a discipline, but since it is too meticulous to cover a period of fifty years and thousands of pages, the semiotic method here is limited to the inter definition of the actors and to the chains of translations" (Latour, 1988: 11).

This mixture of the historical, the material, the sociological and the linguistic, Donna Haraway calls 'material semiotics' (Haraway, 1997).

However, ANT is again reticent about how this analysis is undertaken. As Burgess reiterates: "analysis [...] is a highly personal activity. It involves processes of interpretation and creativity that are difficult and perhaps threatening to make explicit" (Jones, 1986, quoted in Burgess et al, 1988a: 320). Other qualitative research has again proved more open in providing guidance on these questions, and methodological literature is beginning to explore different methods, both computer assisted and manual, for mapping, coding, examining modes of ordering, constructing taxonomies and unravelling the layers in the complex texts produced through qualitative research methods (Strauss, 1987; Burgess, 1988a; Potter and Wetherall, 1994; Law, 1994). These authors focus upon means to derive categories and patterns of interrelationship from qualitative research material that capture its complexity; and move from the empirical to the analytical. Actor Network Theory is similarly concerned with the derivation of empirically

grounded categories from qualitative material, which makes this work a useful guide. But it is also interested in the way that these categories are subsequently enacted in order to generate effects outside of the context in which they are situated. As John Law explains:

> "The provenance of actor network theory lies in post-structuralism: the vision is of many semiotic systems, may orderings, jostling together to generate the social. On the other hand, actor-network theory is more concerned with changing recursive processes than is usual in writing influenced by structuralism. It tends to tell stories, stories that have to do with the processes of ordering that generate effects such as technologies, stories about how actor networks elaborate themselves, and stories which erode the analytical status of the distinction between the macro and micro-social" (Law, 1994: 18).

Ultimately, though the analytical methods used in this thesis owe as much to trial and error as established research methods. The literature on discourse analysis, and more especially the combined interest in exploring methods of discourse analysis at the geography department at UCL, have offered a supportive, critical and reflexive environment from which to undertake these experiments. From 1993 to 1995, UCL geography department ran a discourse analysis group where articles, research methods, interview transcripts, and films could be openly and collectively discussed. From 1995 this role was taken by an environment and society research grouping. The value of this shared support cannot be underestimated. However, again the final form of analysis will owe much to individual expertise and interests: "the investigator cannot fulfil qualitative research objectives without using a broad range of his or her experiences, imagination and intellect in ways that are various and unpredictable" (Miles, 1979, quoted in McCracken, 1988: 18).

The specificities of understanding natural history film and natural history film-making also offered their own peculiar challenges. There is a huge amount of primary empirical material concerned with natural history films. Natural History Film-making is a now a large industry and it supports a large community. The BBC is now only one of about 7 wildlife film-making companies in Bristol, albeit the largest and oldest. Its history alone consists of thousands of films and radio programmes. These are all accompanied by the production scripts and research ideas associated with their production, and the interviews, television reviews, and popular magazine articles which met their transmission. This complexity is compounded by a lack of existing academic analysis on the history, industry, and forms of natural history film-making; and also the absence of commentary and collated material from within the industry. The lack of comparative or complementary material made constructing the basis for a methodology time consuming and difficult. The thesis therefore has many absences which have to be confronted. Schuller, though suggests this is always so: "case study work is inherently untidy and incomplete. This may be true of all research probably to a far greater extent than is commonly recognised. The virtue of case study work, contrary to first impression is that it must confront that incompleteness" (Schuller, 1988: 60). Schuller upholds the assertion that "a dense weave does not necessarily capture more information or insight" (Schuller, 1988: 61). He suggests

however, that these absences must be acknowledged, and that the looser the weave, the more important the theoretical reasons for what was and what was not included.

Latour offers a framework for evaluating the construction of actor networks is as follows: "Do they link more elements than others? Do they allow outsiders to follow science and technology further, longer and more independently?" (Latour, 1987: 17). Latour stresses the ability of actor network theory to make connections but, as importantly, I want to reflect upon what is excluded, not only from the methodological practices of the study, but also the narratives of the actor network. My approach was to focus sharply upon the history of the Natural History Unit as it had been constructed by those currently still in the Unit, and how it was experienced as a constraint and used as a resource by members who had joined subsequently. The macro and micro, historical and contemporary, sociological and linguistic were enmeshed in accounts of the way people negotiated access into the Unit, how they made films, how they viewed the history, and what they expected from the future. From these accounts, I derived the key moments and categories through which members accounted for their experiences, and made links between animals, scientists, film-makers and broadcasters. Singleton expresses fears that such a close focus can involve exclusions and particularly the loss of a position from which to act and to reflect.

> "With non-dualistic approaches such as ANT we are left we certain forms of narratives: with stories which describe rather than explain, which emphasise their own historical contingency, which attempt to say something about what things may be like now and that they could have been otherwise. But those narratives say nothing about what things should be like or have been like. We are left with no political voice, no place from which to stand and claim that our knowledge claims are more valuable than others" (Singleton, 1993: 17).

In her critical application of ANT, Star (1992) makes the point that any actor network excludes some entities and annihilates some forms of knowledge. The historical reconstruction of any actor network theory is therefore as much about accounting for absences, as it is for connecting actors. In constructing the actor networks of natural history film-making it is important to ask what is written out of networks, and to identify zones where there remain tensions as well as successful translations.

These tensions are particularly acute in following the movement of science outside of the laboratory. In this complex negotiation who is followed becomes even more important, as is evident in the number of narratives of networks which have 'failed'. Callon's account of the breakdown of the relationships between the fishermen, scallops and scientists in St. Breiuc's Bay is constructed as the failure of scientific associations (Callon, 1986). However, as fishermen exceed their ascribed quotas, we are not told about the other networks of the fishermen. The story is one about the rational work of science, rather than the everyday lives of the men trying to make a living. Wynne (1993, 1996), however, looks at this in reverse, through an exploration of the ability of Cumbrian farmers after Chernobyl to negotiate

scientific expertise, through their incorporation in other networks. This is perhaps not an issue of theory, but one of research practice:

> "Actor network proponents recognise in principle, people are always engaged in multiple cross cutting networks that confer upon them different interest and identities. Each network tends discursively to reduce its actors to its own monovalent, but actors are usually busy trying to sustain multiple, sometimes conflicting versions, and hence ambivalence" (Wynne, 1993: 332).

I want to suggest that further attention to what happens after knowledge moves out of the laboratory into other arenas may have implications for applying actor network theory. Clark and Murdoch suggest that this: "tussle between the long networks of science and the diverse contexts and situations which lie 'outside' these scientific networks is not one whose complexities have been much uncovered by analyses of science in the making" (Clark and Murdoch, forthcoming). There are already tensions in the literature between how science is able to move over space, which suggests that these tussles have a complex trajectory themselves. In Latour's (1988) account of the Nineteenth century pasteurization of France, he suggests that scientific facts gain in facticity in the movement away from the laboratory. Dorothy Nelkin's picture of selling science (1995) however paints a different picture, in which the public arena, away from the laboratory is now one in which science is increasingly challenged and contested. This is clearly a relationship which changes over time, and there are now a proliferation of points of both production and consumption of scientific expertise which now have to be considered. I want to suggest that my own negotiations of these many actor world, and my strategies for approaching and understanding the hybrid forms and many histories of natural history film-making, are therefore part of these tussles over the long networks of science, and can be politically and modestly, positioned in this way. This texts is merely one point amidst a continuous fabric of other texts that includes all communicative forms through which researcher, researched and institutional framework are relationally defined (Nast, 1994: 62).

3.5. Materials and Methods

The story of research is a necessary compromise between the complexities of carrying out research, and the clarifications of writing. Only a small part of the empirical research involved an immersion in the field, the rest of the four years involved an iterative process between field studies, research design, data collection, interpretation and writing. The story told below follows a period of subsequent reflection, in order to describe my movement into and out of this period of intensive research. Entering the field required learning the language and issues of wildlife television and reconstructing the history of wildlife film-making. Interviews with members of the Natural Unit provided multiple perspectives on how these issues were negotiated, and how the history impacted on present issues. (The process of entering the field is summarised in a flow chart in Appendix A). Moving out of the field also involved several

stages working through analysis in three written versions of the empirical material, charting the relationships between actors involved in various processes of natural history film-making, writing the history of the Unit, and finally merging the two accounts to document the construction of the actor networks of the Natural History Unit. The final version of the empirical chapters attempts to combine this emphasis upon historical account and contemporary issues, through an analysis of the construction of the actor networks of the Natural History Unit, which not only identifies the concentration of power within certain parts of the network, at different periods, but also considers the exclusions.

3.5.1. Learning the Language

The first stage was understanding the language and defining the field. From my initial experiences at the BKSTS Symposium in Shropshire (see the Preface), I gained an overview of some contemporary issues in natural history film-making. These are the tensions identified in the first chapter. There were debates over educational aspirations versus an entertainment imperative, the perennial tension between playing safe and searching for the new, and the role of technology within innovation. There were battles over budgets, within productions and between companies. These debates ranged over questions on obligations to animals within filming processes, who should profit from animal images, and the narratives through which natural behaviour was interpreted. They revealed tensions with a global market for films, between different international styles, control of copyright and balance of the BBC between international sales and public service broadcasting. Lastly, many of these debates were constructed around particular and often competing ideas of audience expectations. These initial ideas were used to develop the theoretical scope of the thesis around the associations of actors within natural history film-making. They highlighted the heterogeneous texts of natural history film-making, and emphasised the importance of an analysis that incorporated technology, animals, international markets, national broadcasting and scientists as well as film-makers. The dominance of the NHU within these networks was already evident, because of their success both within the BBC and in international films; and through their genre of blue-chip natural history films and the importance of David Attenborough as a spokesperson for the Unit. They were the longest natural history film-maker, had the largest archive, and the greatest diversity of films.

I followed up these issues through interviews and information from charities, often excluded from mainstream representation in natural history television[8]. I contacted other international and British based wildlife film-making companies, and I spent time in the BFI archives

[8] *Media Natura* are a collection of media professionals who offer expertise in print and television to other charities. *Television Trust for the Environment* are concerned to aid the production and distribution of television programmes to the 'south'. The *RSPB* have a long history of film production featuring behavioural and conservation footage of birds, although they have recently closed this department.

watching early nature documentaries. Additionally, I spent time understanding the history and construction of factual programming at the BBC, its early history, the changing relationship to its public broadcasting charter, the way it conducts audience research, and its commercial enterprises. At the same time I was making contact with Alan Baker the archivist at the Natural History Unit to see if I could gain access to the BBC archives. This first stage of the research was largely concerned with gathering background material and framing research questions. It provided an introduction to the public languages of television, natural history and conservation issues, and some of the internal issues in the wildlife film-making industry. In retrospect this was the beginning of the processes of understanding the linguistic translations of natural history film-making. The conferences had demonstrated the importance of particular actors within this industry, including the technology for film-making, and began to give me an indication of the concentrations of power. Other interviews identified absences and tensions over environmental film-making, illustrated changing relationships between film-makers and scientists, and debates over the ethics of wildlife film-making. This period of the research cemented the links between the historical development of the industry and its current concerns, and provided sufficient material to go to the Natural History Unit with a relatively clear proposal of my research needs.

3.4.2. Learning the History

My entry into the NHU was through the library. This is an important site for the NHU as information centre where ideas are researched, audience figures are kept, programme scripts end up, sales are made and access to where films are held. It was a useful place for building up the base of research that I required, allowed me to research the history of the unit, and to view films. It also provided me with the resources from which to construct a filmography of the Natural History Unit (See Appendix C). The Natural History Unit, perhaps surprisingly, does not have a single resource from which the history of its output can be traced. Early films are recorded only on card indexes, later films in computer records, with some absences where films have fallen between these two methods. The period from 1946 to 1982 has been summarised by Chris Parson (1982), and contemporary output is monitored in periodic review documents. However, it was clear that the first task to understanding the history of the unit was to provide a framework in which to discuss it. The library was also a comfortable place to be as an academic, it provided me with a desk and an archive of material from which to work, allowing me to operate in a way that would have been impossible in a production office. My experiences of the way that the archives were used in research and sales and the circulations of people and materials through the organisation began to fill up larger parts of my research notebooks, as I considered the way that this history was enacted.

Further perspectives upon the history and functioning of the Natural History Unit were revealed through interviews with key members of staff. My first interviews involved approaching members of the Natural History Unit in particular positions of responsibility, or with

particularly long associations with the Unit, who had been suggested to me from informal conversations with people in the library, canteen or corridor. These first interviews asked about contemporary issues in wildlife film-making, and appealed for reflections upon the history. This revealed a variety of ways of talking about programme slots, productions, filming processes, commercial enterprises, the commissioning process and views of the audience within the Natural History Unit. Within this brief survey clear contrasts between the different histories, roles and film-making styles emerged. There were stark differences between the blue-chip film-making style championed by John Sparks, series producer of the *Natural World*, and the struggles of Richard Brock, throughout his thirty years in the Unit, to represent conservation interests. There were curious contrasts between the challenges of Alastair Fothergill in managing his position as Head of the Unit, and the management of materials in the library by Alan Baker. And there were interesting parallels between discussions with Michael Bright, head of the commercial section (Wildvision), and Keith Scholey, series editor of *Wildlife on One*, on the international market for films. These are people used to representing their interests and positions, often in public forums, and I use their real names.

I also carried out archive research in parallel with this first phase of interviewing, within archived material in the NHU library. Sketchy up to the mid 1970s, but extensive after this date, were subject files composed of newspaper and journal cuttings on a variety of topics. These were mainly organised around the need for retrieval of film subjects, such as habitats, countries and species. However, they also had a number of files on material written on natural history film-making, and a large biographical resource. These were put together from the daily cuttings of newspapers that circulated out of the library, and also, in the case of wildlife film-making, popular wildlife magazine, like *BBC Wildlife Magazine*, *New Scientist*, *International Wildlife*, *Wildlife*, and more specialist technical and broadcasting magazine like *Diver*, *Wildlife Photography* and *The Listener*. The biography files had been compiled in a similar way, with press interviews and profiles, biographical notes and sometimes obituaries of key broadcasting and science figures like David Attenborough, Peter Scott and Desmond Morris. The archives formed the basis from which programmes about the history of the Unit and Unit figures were constructed, and provided the resources through which I could trace the way debates circulated within the Unit.

These initial interviews and archive research provided valuable feedback on the development of the research ideas, and information on the functioning and history of the Unit. It began to reveal something about the historical development of the Unit, and its internal affairs and the external associations. However, I wanted to get a broader cross section of opinion from the Unit, I needed a firmer basis for interpreting the history, and I wanted to explore how these ideas were negotiated by different actors. In order to recruit members of the Unit for interview, and to explore the way the history of the Unit was present within the Unit hierarchy, I used a questionnaire circulated to the whole Unit, with just three open ended questions. (The

questionnaire is included in Appendix A and the responses in Appendix B) This asked people to reflect upon the programmes, people and technologies that had been influential in the development of the Unit, in raising the public profile of the Unit's films, and influential to them personally. The questions were followed by a brief note asking if people would be happy to expand their answers and experiences in a confidential interview. After several trips around the building, and several circular e-mails, the 170 or so members of the NHU returned 23 questionnaires, 17 of whom were happy to be interviewed. A few additional people were followed up through informal contacts.

3.4.3. Following the Actors

The one to one interview format gives people the opportunity to present their interpretations of events and allows for multiple perspectives. I used a semi-structured interview, preceded by an interview schedule in order to maximise the relatively brief period of time I was able to spend with people (see Appendix A). The interview topics included questions about the range of stories that I was interested in. Firstly, there were stories about the functioning of the NHU and how individuals defined the network. Secondly, I enquired further into the stories of the Unit history that emerged from the questionnaires, looking at how people defined different categories of film, film-making processes, technologies and issues. Finally, I was interested in personal stories about what opportunities and constraints these offered, what resources they felt they drew upon, and what they felt excluded from. These personal perspectives emerged from men and women of various ages, working on a variety of programmes and with differing motivations for their involvement in natural history film-making - some expressed their interest as mainly natural history, others primarily to do with making television programmes, and yet others stressed the importance of communicating an environmental message. These interests can be traced in their responses to the questionnaires (see Appendix B), and also emerge in the empirical chapters of the thesis. The interviewees who were followed up using the questionnaire were assured anonymity and they are represented through pseudonyms. It is nevertheless helpful to sketch out the background and interests of people who contributed their perspective to the history of the Unit.

7 people to whom I spoke worked in a producer or assistant producer position. This will give them varying degrees of responsibility over the initiation and construction of programme ideas, depending on age and experience. Anthony and Oliver were currently working on international series, and both saw themselves as being at the forefront of developments in new methods of filming natural history. Iain and Ben were involved with British magazine programmes. Both had come from scientific backgrounds and enjoyed this element of their work, though they had moved into natural history film-making because of their dissatisfaction with the narrow focus of mainstream zoological research. Ruth and Jenny worked on a variety of individual programmes whilst I was there; and enjoyed this diversity to the work, though neither had worked on a blue-

chip series. Elizabeth was a producer in Wildvision, with a long and varied experience of working in natural history film-making, both in the BBC and outside.

I spoke to 7 researchers, whose experience ranged from a few months to over five years. Their jobs would entail liaising with scientists, producers and production assistants to put together the ideas and practical details for a programme shoot; as well as researching existing literature, programmes and library footage. Susie and Gareth had only been in the Unit for a few months, though both had previous experience in the media; Susie in radio and Gareth in an independent production company. Adrian had similarly just started, and was working short periods on a variety of programmes, although he suggested he would like to end up working for a blue-chip series. Juliet was researching on an overseas series. Charlotte worked as a researcher in Wildvision and was keen to carry on in any capacity, whilst consistently advocating the Unit's responsibility to cover environmental issues. Nic had worked for 5 years as a researcher, currently on a British Magazine programme, and suggested that she was now keen to try and move up into a producer position. Denese had also worked for a similar period as a researcher, also now on a British Magazine programme, but she left soon after I interviewed her as she felt the job no longer offered sufficient opportunity or security.

I also talked to several people not directly involved in programme production. Alison worked with library information services, although she had a long engagement with zoology in other areas. Margaret worked in an administrative capacity as production assistant, and Alex was involved in programme budgets. These people all feature in the empirical chapters of the thesis and their experiences of the history of the Unit both illustrate and contest the more established narratives given in public presentations of the Unit through articles, programmes, and my conversations with key personnel. The interviews were held within the work situation, whether during lunch or after work, in an office or in the BBC bar and became a forum for people to contribute their perspective to the circulation of ideas within the Unit. These were ideas that they might discuss with their colleagues, but were now articulating to an outsider, or a partial outsider. Sometimes it was clear that there were specific agendas people were keen to circulate back to the NHU via the thesis; other times this private forum within the world of work, provided an opportunity to raise issues they felt uncomfortable within in a more public situation. Other people were clearly happy to be involved in the research, to communicate their ideas and their skills, and to be of help. Their difference ages, experiences and interests, however, mean that they each contribute more to some chapters than others.

3.4.4. Analysing Relationships

The first stage of analysing the complex stories of natural history film-making involved examining and mapping the categories that people used, and the associations which they formulated in the processes of doing natural history. Each interview was fully transcribed, and

all the archive material collated. The material was then coded using classifications derived from interviews and archive sources, which identified significant points in the historical development of the Unit, and examined resources and restrictions that this presented to members of the Natural History Unit. These initial classifications identified different forms of programme making from the early films of scientists, the development of blue-chip natural history film-making, technological innovations and narrative structures. These programmes involved distinct definitions of quality and privileged certain film-making practices, articulated around what made a 'strong' sequence and a 'good' programme, and which individuals exhibited film-making 'integrity' or constituted 'strong' directors.

The external associations of the Natural History Unit were also identified in this initial coding, though references to the relationships of the Natural History Unit to science, to audiences, to the BBC, to the rest of the media and to conservation. Finally, the personal position of members within the Natural History Unit was identified through stories about personal influences, access to the Unit, individual contributions to production and meetings, and their hopes and aspirations. These relationships were mapped, usually quite literally, by cutting and pasting large quantities of material to enable a composite picture of the circulation of ideas and material around the Unit to be constructed. These were written up into three more analytical pieces which focused upon the stories about the history and position of the Unit; stories about the construction and narratives of individual productions; and stories about personal creativity and ambition within the Natural History Unit. This enabled the changing relationships and the positions of power and control in the network to be identified, and began to clarify the periodisations in the development of Natural History Unit.

This emerging picture of the relationships within the Natural History Unit was complemented by on-going participant observation within the library, at Natural History Unit meetings and during a brief period with a British Magazine programme. These situations within the Natural History Unit all provided different perspectives on the way that categories emerging from the analysis were articulated within decision making processes. They provided confirmation and clarification of the relevance of these codes at different scales from the day to day organisation of the production processes, to the longer term perspective on the programmes to be commissioned in the coming years.

3.4.5. Constructing Narratives

Embedding the changing relationships between different actors and processes within the historical development of the Natural History Unit required further archive research. I was wanted not only to chart the changing configurations of science, broadcasting, conversation and film-making within the Natural History Unit, but also to try and open up these categories to understand them more as temporary associations, rather than as fixed entities. This involved

additional research on the histories of broadcasting, the developments of zoology and ethology as well as the changing accounts of the environmental movement. These are the additional actors within these stories that play periodic roles in the accounts of members of the Natural History Unit. As the Unit negotiates its inability to represent environmental programmes, there is the larger context of the rise and fall of environmental issues in the media. Other players in the industry like Anglia's *Survival* and independent production companies move in and out of the story. The part played by the scientists similarly shifts, the developments in ethology playing an important role in early stories of the Natural History Unit, as film-makers ally themselves to science. The BBC in London assumes only key importance in the 1990s, as regional broadcasting comes under stricter control. These elements shift in and out of focus around the main narrative which constructs the historical development of Natural History film-making.

The structure for this history emerged from significant programmes mentioned in questionnaires, archive material and interview discussions. The history is constructed around the developments of four main programmes: *Look* (1955-69), *Life on Earth* (1979), *Supersense* (1988) and *Watch Out* (1995). These do represent milestone achievements for the Natural History Unit, but they also function as vignettes around which to articulate the changing networks of natural history film-making. The construction of each of these programmes requires the film-maker to make a series of choices over story, plot, rhetoric and filming methods. Each period therefore features a recurring set of debates over different methods of filming and representing animals that members of the Unit have to negotiate in order to produce and innovate within natural history film-making.

3.5 The Actor Networks of the Natural History Unit

The story of the construction of the networks of the Natural History Unit works with both these dimensions, to explore the development of associations over time, and their implications for different relationships within the Unit. The final form of this narrative follows the construction of the networks of the Unit around four important programmes, which feature different ways of ordering nature, criteria for judging quality, filming practices and views of the audience. However, in order not merely to affirm the pre-eminent position of the Natural History Unit, it does so in a way that traces the construction of the network from its weak points to strong holds; its expansions as well as the points of tension and contraction. The narratives also illustrate that members of the Unit are able to take many roles within these stories, for they are actors in the many different worlds of television production, science, conservation, and as audiences themselves. The last empirical chapter explores these complex positions taken by members of the Unit at just one point of the network in the editorial process, as they reflect on the programmes to be made over the next few years. The combination of these stories of

natural history film-making is thus a broken narrative, which I would hope is "both a little more and a little less than a story" (Latour, 1996: x).

There are five empirical chapters. The first empirical chapter uses the early context of natural history film-making to present a period of broadcasting opportunity for the informal networks of scientists, conservationists and radio producers around BBC. The main challenge for this period was obtaining access to animals which resulted in a series of programmes experimenting with broadcasts from the zoo, and transmissions of film from early ethologists. Chapter 4 explores the reasons for the professionalisation of scientific forms of natural history film-making through the success of programmes *Look*, presenters like Peter Scott, and the natural history film-making skills of a amateur naturalists like Eric Ashby and Ernest Neal.

Chapter 5 explores the globalisation of the associations of the Natural History Unit prior to the production of *Life on Earth* (1979). The period to the end of the 1970s marked an increasing professionalisation of broadcasting and natural history film-making, aided by growing networks of research scientists. Through its production skills the Natural History Unit was able to co-ordinate and mediate between this complex web of broadcasters, presenters, producers, naturalists, and scientists creating associations to build the actor networks of the Natural History Unit and establish the genre of blue-chip natural history films.

Chapter 6 illustrates the extension of the genre of blue-chip natural history film-making, but also indicates the tensions that begin to emerge in the 1980s over the representations of 'nature in the raw' that they claim, and the increasing modifications of nature required to innovate within this format in programmes like *Supersense*. As the results of the Unit's representations of nature become more controversial, so there is more attention to the filming methods. This period reflects a prolonged negotiation over the environmental responsibility of the Unit, of the place of animals within filming process and who is privileged to speak for what is ‘natural’ behaviour, as the NHU becomes enmeshed in the tussles of the long networks of science, the media and conservation.

The story in Chapter 7 is a more complex one. The dramatic changes in BBC structure and broadcasting environment in the 1990s affected the Natural History Unit, which had developed fairly protected from centralised control and intense competition. The political pressure on the BBC intensifies in the ten years up to its Charter renewal in 1996, and government drives to increase accountability, efficiency and competition at the BBC means that managing enterprise and performance emerge as key skills within the networks of natural history film-making. The increasing need to secure scarce audiences means the Unit has to continue to innovate within existing genres, and increase attention through other media such as the press and multi-media, one example of which was *Watch Out*. These new associations increase efficiency in the Unit, but also introduce new forms of surveillance which they have not had to deal with before.

Chapter 8 focuses attention on the future of natural history film-making, through an account of the decision making process through which potential programme ideas are discussed. This chapter introduces the links between past resources and future expectations; exploring how the ways that animals have been inscribed, representations globalised, audiences incorporated, ethical and environmental issues overcome, and the Unit managed throughout its history, provide a set of institutional networks that individuals have to negotiate in the processes of doing natural history television.

IV
The Era of the Amateur Naturalist Film-Maker

> "Initially the early people were more cameramen than producers, Heinz Sielmann, you know, Eric Ashby. In the early days there was no film available and they were desperate to get hold of film, and they went out to anybody who'd filmed any wildlife footage. It was not so much programmes but individual sequences, woodpeckers and kingfishers, which were very memorable".
>
> (Alastair Fothergill, interview 16.6.95)

4.1. Introduction: Inscribing Animals

The BBC's Natural History Unit was formally founded at the BBC in Bristol in 1957. The establishment of this Unit for natural history programmes brought together ten years experience of radio production and four years of experimental television transmissions. The informal television collaborations of Peter Scott and Desmond Hawkins in the early 1950s, were recognised in the establishment of a Unit which bought together a few radio features production staff interested in natural history, the radio producer Desmond Hawkins and the studio engineer Tony Soper; one production assistant paid for by television and the assistant film editor belonging to the West Region Film Unit, Chris Parsons (Parsons, 1982: 58). This chapter outlines the challenges and the achievements of these first four years of natural history television.

Post-war Britain offered a number of opportunities for the popularisation of natural history, which are outlined in the first section of the chapter. There was a vibrant natural history community contributing to scientific developments in ethology and ecology, through county naturalist trusts and scientific institutions like the British Ecological Society (BES) and Royal Zoological Society. Natural history was expanding further into popular arenas with books such as the Collins *New Naturalist s*eries (1945), radio broadcasts on the home service like *The Naturalist* (1946) and gathering wider support for conservation initiatives, institutionalised in the Nature Conservancy Council in 1949. The renewed transmissions of BBC television from 1946 offered a new forum to communicate natural history to audiences increasingly spending their leisure time in countryside and nature activities.

However, there were still challenges facing early natural history television. Television was a relatively new 'gimmick', with funding one-tenths of that available to radio. Filming technology was unwieldy, severely restricting the places where programme-makers were able to get near to animals. The existing conventions of natural history cinema, seen in the films of the American director Walt Disney, were seen as inappropriate for early BBC television which was conceived of as a live electronic medium, with a clear educational remit. Capturing wildlife on television therefore meant working with naturalists, scientists, zoos, broadcasters and radio producers, in order to create a *new* language and practice of natural history television. This second section

illustrates the translations of interest this required between different naturalist and zoological organisations, the competing technologies used for inscribing and enrolling animals, and the emerging dominance of the naturalist's lecture format for the presentation of natural history on television.

These first experiments in natural history film-making took place when the BBC enjoyed a position as monopoly broadcaster. The arrival of ITV in September 1955 presented further challenges to natural history film-making at the BBC. The third section of the chapter examines the impact of this competition and the BBC's need to gain more control over the informal associations of natural history film-making, evident in attempts to command film content and ownership, and in the first steps to monitor and react to audiences. The period also illustrates the emergence of a growing division between the skills of naturalists and broadcasters, the disappearance of the combined amateur naturalist and film-maker, and the emergence of a professional status for natural history film-making. In 1957 this professionalisation was recognised within the BBC, and the wildlife film-makers in Bristol were given Unit status within the organisation.

The final section of the chapter draws these strand together through an analysis of the dominant way that animals were enrolled into these new networks of natural history film-making. The early associations of natural history films were driven by the search for ways of inscribing animals. Similar to the point of inscription in science, inscription is the part of the television production processes when the film is exposed, or video tape magnetised, to record images of the animals at which it is directed. I have already suggested that the capacity of technical discourses to inscribe reality in the form of images or information is a central node in the networks of natural history film-making. In this chapter I explore early debates over the appropriate ways of inscribing animals. From these debates a way of enrolling animals in early natural history films emerges based on detached observation, supported by the shared skills and interests of naturalists and film-makers, and presenting a view of 'natural' animal behaviour untouched by humans. This form of inscription is incorporated and professionalised in the first formations of the Natural History Unit, and forms an enduring legacy of this early history.

4.2 Post-War Opportunities

The story begins with a set of people in the early 1950s such as Desmond Hawkins, Peter Scott, Tony Soper, Julian Huxley, Eric Hoskings and James Fisher. These individuals were often involved simultaneously with publishing and broadcasting, natural history and conservation. The extensive influence of this set of people on developing post-war attitudes to nature in Britain can be traced through institutional histories of organisations like the Royal Zoological Society (Gruffudd, 1997), the Nature Conservancy Council (Nicholson, 1987; Sheail, 1976) international conservation agencies such as the WWF and IUCN (Neuman 1996), the Collins

New Naturalist series (Marren, 1995), the development of Geography as a discipline (Matless, 1992) and of course, in the pioneering natural history television broadcasts from the West Region Film Unit, later to become the BBC's Natural History Unit (Parsons, 1982).

The interests of this set of individuals moved across disciplinary boundaries more fluid than today, forming a tight social and intellectual network of shared interests and ethos. As Peter Marren suggests:

> "The worlds of professional biology and natural history were relatively close-knit, thanks to the British penchant for clubs and societies in which amateur and professional mixed freely. [...] These were men who knew one another at least by repute, and were often colleagues and friends as well, through common membership of the British Ecological Society or the contemporary Nature Reserves Investigation Committee" (Marren, 1995: 31).

These people worked together, went on expeditions[9] and to conferences together, edited books together, and made television programmes together. They made contact through friends, colleagues, publishing and broadcasting initiatives and organisations like British Trust for Ornithology (BTO), The British Ornithological Union (BOU), The Royal Society for the Protection of Birds (RSPB), the British Ecological Society (BES), the Royal Zoological Society, and other naturalist trusts.

These individuals shared the belief that the study and practices of natural history could be valuable in post-war reconstruction of British planning initiatives, education, citizenship and identity. Natural history combined traditional values of empirical observation and the search for order, with a new emphasis upon scientific problem solving, planning and educated citizenship which were held in high esteem in post war British culture. This consensus was evident in the conservation initiatives which emerged after the war. Sir Julian Huxley, Arthur Tansley and other scientists in the BES had argued for an official protected areas and wildlife protection system to preserve the scientific research potential of wildlife sites revealed by the expanding discipline of ecology. Inter-war calls for landscape preservation to maintain the health of the nation (Matless, 1994), were replaced with the forward looking term 'conservation' (Sheail, 1995: 282) and an alliance of ecologists and planners was built around science and embedded in the first legislative agencies for nature conservation stewardship in the Nature Conservancy Council and the National Parks Commission of 1949 (Sheail, 1976).

[9]The focus of these networks around travel, birds and the BBC is illustrated by the following expedition that included a number of well known contemporary naturalists: "A chance meeting with the well known ornithologist Guy Mountfort in a BBC studio led to an expedition to Spain in 1956, and every summer since then Hoskings has been abroad adding to his already enormous library of bird photographs. The 1956 expedition was Las Marismas of the Coto Donana in Southern Spain, and was led by Guy Mountfort; party members included Lord Alanbrooke, Sir Julian Huxley, Max Nicholson, James Ferguson Lees and James Fisher" (Sitwell article on Eric Hoskings, undated).

The new science of ethology, pioneered by Konrad Lorenz in Germany, was also revolutionising the study, display and conservation of animals. Lorenz's ideas were brought to England by the naturalist Julian Huxley in London and the zoologist Niko Tinbergen in Oxford. Tinbergen established a centre for the study of animal behaviour in the Zoology Department at Oxford, which included Desmond Morris amongst its students (Barnet, 1990). Julian Huxley as member of the London Zoological Society, and Desmond Morris as curator of Mammals in London were to have profound influence over modern designs for animal display at London Zoo. New animal enclosures, such as the penguin pool designed by Lubetkin, replaced Victorian menagerie style cages and were intended to display typical animal *behaviour*, rather than merely emphasising animal *form* (Gruffudd, 1997). The concerns of this group of people also extended to initiatives overseas to preserve animals within their habitats. Peter Scott and Julian Huxley were influential in setting up the World Wildlife Fund for Nature in 1961, for which Peter Scott designed the logo.

The period from 1945 was marked by the combination of public authority to plan for nature, and the promotion of scientific citizenship through media and education. Communicating and achieving consensus around these ideas were seen as important for rebuilding a forward looking nation. Nature study programmes were implemented in schools, and students enrolled into the planning process through Dudley Stamp's Land Utilisation Survey (Matless, 1992). New ideas on nature and nature conservation were popularised through publishing innovations like the Collins *New Naturalist* series. As editors of this series, Dudley Stamp, James Fisher, Julian Huxley and John Gilmour pioneered the publication of books combining the latest scientific research with a popular, but unsentimental approach to natural history (Marren, 1995). These books synthesised a British naturalist tradition with new developments in wildlife photography, edited by Eric Hoskings; the artistic modernism of Clifford and Rosemary Ellis dust jackets; and the developing fields of ecology and ethology. The books are a testament to a way of approaching nature that appealed to traditional values of observation, deduction and experiment, yet was keen to promote the latest ideas in natural science. At the same time, the series used new photography and printing developments to claim to offer the most stunning pictures of nature then available. Nature was diverting and healing for a nation recovering from war; reasserting links with past but also looking to the future. As James Fisher is reputed to have said to the publisher Billy Collins in 1942: "what this country needs is a good series of books on natural history to take its mind off the carnage" (Marren, 1995: 21).

This group of naturalists, scientists and conservationists also had links with the pioneering experiments in natural history television which were being carried out at the BBC in Bristol by the radio producer Desmond Hawkins. Hawkins had lived and worked in London before the war: writing novels, editing the literary journals *The Criterion* and *New English Weekly* (where he had published work and criticisms of Hardy, Thomas, Joyce, Eliot, Orwell, Pound and Lawrence) and later moving into radio broadcasting (Hawkins, 1989). After the War Hawkins

relocated to Bristol to continue his career, to take a course in television production, and pursue his interest in natural history. This was to be a new start for Hawkins: "The incendiaries and explosives ranging down on London, which destroyed my novels, deflected me into the new medium of radio documentaries [...] The world I had grown up in was lost; but a new world lay ahead" (Hawkins, 1989: 214).

Hawkins' interest in natural history and broadcasting inevitably brought him into contact with the naturalist, painter and broadcaster Peter Scott. Peter Scott, who had radio and television experience as well as interests in filming, painting and, previously, shooting wildfowl, was in the process of setting up the Wildfowl Trust at Slimbridge (1946), just up the Severn Estuary from Bristol. Their partnership produced the first radio broadcasts from Bristol: *The Naturalist* (1946) and *Bird Song of the Month* (1947), produced by Desmond Hawkins and presented by Peter Scott (Parsons, 1982: 27). The re-launch of television broadcasts after the war in 1946 offered the opportunity to extend wildlife broadcasts from radio to television and introduce a new vision of wildlife to the British public. The natural history radio experience at Bristol meant that Hawkins and Scott, newly joined by Tony Soper and Chris Parsons, were well placed to shape this vision[10].

The resumption of television broadcasts after the war offered both opportunities and constraints to the television transmission of natural history. The first BBC Director General after the War was William Haley. Haley's immediate concerns were to develop radio broadcasts in line with Reith's original intention to 'inform, educate and entertain' and Reith's influence flourished under his new regime. Both Haley and Reith had similar educational aspirations for the BBC as a monopoly broadcaster[11]. Haley liked to use the image of British society as a cultural pyramid, slowly aspiring upward, with the BBC acting as the lever that activated this progressive upward movement (Kumar, 1977: 246). Haley therefore concentrated upon educational programming, pioneering the Third Programme in 1946 and introducing the Reith Lectures in 1948 (Cain, 1992). He offered a supportive Sunday slot, after the one o'clock news, for the natural history

[10]Nature films, travelogues, scenics and expedition films had been an important part of non-fiction cinema entertainment since the 1920s. In Britain, Mary Field and Percy Smith who filmed *The Secrets of Nature* through the 1920s and 1930s, found that their nature studies had a "strong following in what are known in the cinema trade as 'better-class halls', though sometimes their attraction wanes in 'halls where Westerns are preferred'" (Field and Smith: 1934: 21). In the United States, Walt Disney had developed nature films into a distinctive strand of wildlife entertainment in the late 1940s and early 1950s with films like *The Living Desert* and *Seal Island*, which received an Oscar in 1949. Animals had also proved a fascination for early television. In the 2LO days of 1922, when the BBC was a commercial station, the second talk ever transmitted was called *How to Catch a Tiger* (Boswall, 1971: 1). However, when the BBC started television broadcasts again in 1946 there was no established format for natural history television and many of these precursors were unsuitable for the way that the BBC wished to develop.

[11]Reith explained his ideas about broadcasting and citizenship in his memoirs: "We tried to found a tradition of public service, and to dedicate the service of broadcasting to the service of humanity in its fullest sense. We believe that a new national asset has been created [...] the asset referred to is of the moral and not the material order that which, down the years, brings the compound interest of happier homes, broader culture and truer citizenship" (quoted in Ang, 1991: 109).

radio broadcasts from Bristol (Parsons, 1982: 27). However, Haley was less interested in developing the medium of television.

Television was still in a relatively experimental stage within the BBC. In 1950 the television signal only covered 33 to 50% of the population around London, the South East and six other major cities, and broadcasting was limited to 30 hours a week. By 1953 only around 1 million television licenses had been sold at a cost of £1 each (Cain, 1992: 63). Compared with the national audiences radio had achieved during the war, television was therefore a secondary concern. Television was dominated by the adoption of radio formats and committed to broadcasting largely as a live electronic medium. Some celluloid footage was screened, but television concentrated upon its ability to act as a live medium where it could compete with cinema, rather than relying on the quality of its images where it could not (Parsons, 1982). One quarter of all early television programmes featured live outside broadcasts of public events like the 1948 Olympics, football, boxing, the Proms and dancing competitions. Other programmes were presented from the studios of Alexandra Palace featuring discussions such as the 1951 election broadcasts, cookery and gardening demonstrations, and children's programmes like *Muffin the Mule* (Cain, 1992: 64-65). Television news began simply as a reading of sound news, and news in vision did not start until July 1954 (Cain, 1994: 64).

The technological and stylistic limitations of early television offered particular challenges for the presentation of natural history. A format had to be devised where natural history could be transmitted with presenters and animals from the studio, or where the presence of animals could be guaranteed in an outside broadcast. Early wildlife programmes on television were therefore dominated by the search for innovative ways in which images of animals could be captured in the studio, by large outside broadcast cameras, or in a studio format which mixed live presentation with celluloid footage. The early black and white natural history broadcasts used a variety of formats to achieve this. Firstly, there were a number of programmes using zoos as sites where animals, already controlled through enclosures, could be filmed. Secondly, there were programmes which drew upon the conventions of the naturalist's lecture, in which animals could be represented through the film footage of ethologists and amateur film-makers. Lastly, the BBC bought in expedition films made primarily for cinema by American and European film-makers, such as Ossa and Martin Johnson, and Armand and Michaela Denis[12]. These

[12] These expedition wildlife films followed in a cinematic tradition of linking romance and adventure with natural history. From the incipient days of cinema when Cherry Keaton had accompanied Roosevelt on a hunting trip to East Africa; expedition films, featuring explorers rather than naturalists, had become popular forms of animal entertainment, and their stars had become household names. The first couple, injecting romance into their African adventures were the Texans Ossa and Martin Johnson. They were followed in East Africa by the Belgians Armand and Michaela Denis, who having made their name in cinema made their first appearance on BBC television in 1954 with *Filming Wild Animals*. This format was often sponsored by the automobile industry; Renault funded the Denis' filming. Armand and Michaela Denis featured in at least 6 series on BBC television, and they were followed by Hans and Lotte Hass, an Austrian couple who took their cameras underwater in the series *Diving to Adventure*. The films of the Frenchman Jacques Cousteau transmitted by the BBC in the early 1970s can perhaps also be placed

expedition films fall within a separate and well rehearsed history of ethnographic and imperial cinema whose story is told by MacKenzie (1988), Ryan, (1997) and Painter (pers comm). They were seen as an expensive and often unsuitable for the way BBC to fill air time, and tended only to be screened when there were insufficient resources to fill air time with specially shot material (Parsons, 1982: 70). In the next sub-section, I therefore want to concentrate upon the programmes from the zoo and naturalist's study respectively, in order to examine their different strategies for enrolling and representing animals, and to chart the associations of film-makers, zoologists and naturalists developed in these early networks of natural history film-making. These two formats were transmitted concurrently, but it was the views of nature and the technological developments enabled by the naturalist's lecture which were to inform the next phase of the development of natural history film-making.

4.3. *News from the Zoos*

The early years of the 1950s saw a proliferation of television programmes showing animals in zoos and studios. Features in London produced *Looking at Animals* and *All about Animals* with George Cansdale. David Attenborough presented a series of *Zoo Quests* 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* was presented by James Fisher from a series of European Zoos; with *World Zoos* extending this format as technological developments enabled transmissions from further afield. *Animal Magic*, which was to be one of the most successful series for the Natural History Unit, was presented by Johnny Morris from Bristol Zoo in Clifton for 21 years, from 1962 to 1983. When ITV transmissions began in 1955, Granada built a studio within London Zoo where they presented *Zoo Time* with Desmond Morris.

The zoo was an important site for early wildlife television, through which exotic animals could be enrolled into the networks of natural history television. Access to all manner of animals could be guaranteed within the zoo and "you could get a signal either into a sort of Post Office or telephone wires or by the radio dish" (John Sparks, interview 13.6.95) in order to transmit the images live. The unwieldy size of the 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 video tape machine" (John Sparks, interview 13.6.95). The scale of the operation required to film an outside broadcast meant that animals could not be approached outside of the enclosure of the zoo or studio. The zoo was therefore an important site for early natural history films where animals could be made *stable* - through outside broadcast cameras, *mobile* - for transmission out of the zoo and *combinable* - into the schedules of domestic television.

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in this tradition. These films did prove popular with audiences, but did not directly influence the ways in which the NHU was to develop.

The programmes resulting from these early broadcasts did make 'good' television. Broadcasting from the zoo meant that programmes were able to offer the visual appeal of unfamiliar 'exotic' animals. John Berger, writing on 'looking at animals' in the zoo stresses how entertainment is offered through the sights and spectacle of charismatic animals like the elephants, gorillas and penguins; the pleasures of looking at animals evoking the contradictory thrills of the unfamiliar and of recognition; surprise and confirmation (Berger, 1980). The format of the zoo programme brought appealing images to television audiences, and advertising for the exhibitions of the zoos. The shared visual emphasis of television and the zoo made early collaboration appealing to both zoo officials and film-makers and this format was also largely acceptable to contemporary audiences. The processes of inscription alongside the alliance of interests of audiences, broadcasters and zoological societies are some of the reasons for the early success of these programmes.

However, television programmes were also able to innovate on the spectacle offered by the zoo through the possibilities of human-animal encounters the studio format offered. Television could offer a different position of identification for the viewer, by showing presenters actually interacting with the animals, transmitted into the intimacy of their own homes. The live format of television meant these interaction were often engagingly unpredictable. Interviewed in 1990, David Attenborough recalls these early days:

> "Each week the curator of London Zoo brought a different animal into the studio and put it on a mat. It wasn't much fun for the animals who were plonked under the arc lights, but it was fairly apparent that it was good television. The creatures would bite the curator, or relieve themselves down his jacket or escape and need to be chased around the studio" (David Attenborough, quoted in *The Independent Magazine* 29.9.90:48)

This format was entertaining and it was also capable of enthusing and developing empathy. As one current producer suggests, seeing Johnny Morris actually *touching* animals was an important part of developing his interest for nature:

> "I think probably quite a few people have a great affection for Johnny Morris. What you learn from Johnny Morris, is he is an affable sort of bloke, but he got hands on with animals. And that is important with children. So you could picture yourself holding that lead or whatever. That was the important bit" (Iain, interview 19.7.95).

The early television broadcasts from zoos were able to offer a new view of animals to audiences that not only presented images of animals interacting with people, but was also able to mask the confinement of animals. Awareness of the enclosure of animals was unavoidable in 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 been first built, but as sensibilities shifted they looked increasingly barbaric. As attitudes towards the enclosure of animals began

to shift, television seemed better positioned to respond to public appetites for seeing animals without enclosures. Zoo films did become popular staples of wildlife programmes throughout the 1950s and 1960s, but their use became increasingly restricted to children's television.

The presence of the studio, cameras and people at the zoo, and the light and heat of filming meant that 'natural' animal behaviour could not be captured. The desire of the producers in Bristol to show those aspects of animal behaviour revealed by ethology, meant they turned increasingly to methods of inscribing animal behaviour through film used in science. Moreover, Zoological Societies were also in the process of changing the image of their functions, which introduced further tensions into the translations of interest between film-makers and zoos. With the rise in public criticism of animals in zoos and growing scientific interest in conservation, zoos wanted to be seen to break the links with entertainment and to redefine themselves as more educational.

George Cansdale, presenter of *Looking at Animals* and *All About Animals* and 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 London 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). This form of interaction had no place in the new paradigm at London Zoo. Zoos began to concentrate upon developing more naturalistic enclosures, and more educational tools for interpreting the zoo experience, attempting to soften the impact of the evident captivity of the animals. The developments of television natural history shifted to the other strand of wildlife broadcasting which drew upon the traditions of the amateur naturalist, a format which offered a less contested basis from which to innovate programming, involved a different form of interaction with animals, and drew upon associations between naturalists and film-makers.

4.4. A New *Look* at Nature

The second strand of natural history film-making drew upon existing footage of animals and animal behaviour filmed by scientists and naturalists, overcoming the limitations of using celluloid footage by incorporating these into the conventions of the naturalist's lecture. This format was used for early programmes of *Look*, the first regular programme produced by the West Region Film Unit in Bristol. This was distinctively subtitled "a programme of science and observation" (Hawkins, quoted in *Wildlife Jubilee*, 1982) which strikingly differentiated it from the entertaining antics of wildlife programmes from the zoo. Starting with a number of experimental broadcasts from May 1953, *Look* formed into a series in August 1955 which ran for fifteen years until 1969. *Look* was presented by Peter Scott, from a studio in Bristol where he appeared seated behind his desk in a mock up of a naturalists' study, surrounded by the maps, charts, microscopes and field glasses, through which he would guide the viewer into new

worlds. In the first programmes he would then move over to the sofa to meet his guest and maker of the film that they were to introduce, watch and discuss. Removing the film from the can, placing it in the projector and cranking the handle, the screen would flicker into life. The approach taken by the early *Look* was a television lecture with film, mixing expert discussion, props and maps, with reels of film footage which might last for about 8 minutes. This programme format overcame the problems of enrolling animals by drawing on existing footage by amateur naturalists, combining it with the demands of a live broadcast in the studio where Peter Scott would hold the programme together through his discussions and drawings. As Peter Scott explains:

> "The pattern of the lecture was a short preliminary talk with drawings and a map followed by the first reel of film. There was then a short pause while the film reels were changed, during which I progressed the story with more drawings; finally at the end of the second reel of the film there was a brief conclusion. This technique was obviously capable of extension, so that instead of two reels one might have three or four sections of film with spaces for discussion in between them. This would then become more like a lantern slide lecture, but with film inserts instead of slides. Thus was the framework of the television lecture with film established" (Scott, 1961: 601).

This vehicle for natural history drew upon an established and respected format, endorsed the BBC educational principles, and moreover, offered different practices for enrolling animals that owed less to exhibitions and more to science. There were, however, other difficulties arising from the lack of television facilities in Bristol which had to be overcome. *Look* was run on a "modest budget and payment for film-makers was on the basis of a few shillings for each foot of film used" (Parsons, 1982: 110). The small amount of money available meant there was no question of specially commissioning material and payment was could only be for the rights to transmit existing film. The producers at Bristol therefore depended upon men, often of private means, who had the time, skill and enthusiasm to extend the medium of wildlife photography from still to moving pictures. There were only limited sources of this film available.

Peter Scott had filmed his own material during expeditions to Iceland, Greenland and South America. These films, taken to illustrate his presentations on the lecture circuits around naturalist societies to raise money for setting up the Wildlife Trust, were shown early on in the series. Other footage, often of birds, was the work of amateur naturalists and enthusiasts such as Field Marshall Lord Alanbrooke, Dick Bagnall Oakley, Walter Higham, and Eric Ashby. Further film was taken for ethological studies: Julian Huxley's material of gannets, James Fisher's of fulmars and Niko Tinbergen's of herring gulls. Yet more film was acquired from Germany where film-makers like Heinz Sielmann, and Eugen Schumacher, were at the forefront of technological developments in portable film cameras and filming techniques. The producers at Bristol often worked through informal social networks in order to procure these films.

> "We had to find film for these programmes. And we used to telephone round to Peter Scott's friends, to people like Eric Hoskings, Lord Alanbrooke, people like that. Anyone who'd got an amateur film camera and did bird films in their holidays mostly" (Tony Soper, quoted in *Wildlife Jubilee*, 1982)

Ethologists at this stage were invariably pleased to participate in raising the profile of their new discipline. For example, Parsons suggests that Niko Tinbergen was "keen to disseminate his ideas and discoveries about animal behaviour as widely as possible" (Parsons, 1982: 259). In fact, the associations between film-makers and ethologists at this stage, appeared stronger than academic links between zoology and ethology. A number of early natural history television producers became film-makers precisely to observe natural animal behaviour in the wild; a form of zoology not widely taught at universities.

> "When I emerged from my degree the kind of research I saw going on in zoology in Cambridge was not the kind of behavioural ethological research I was interested in [...] I didn't want to go back to looking at dogfish in formalin. So I didn't go back to university at all" (David Attenborough, quoted in Burgess and Unwin, 1984: 112).

Animals were enrolled into this network through different means to the broadcasts from the zoo. Whereas the zoo broadcasts relied upon the visual display of animals already in sites of captivity, the practices of celluloid natural history film-making involved the use of sophisticated expertise in order to capture animals on film. Many of the practices of observation, tracking and field craft required, had been developed by individuals in the pursuit of hunting animals and birds. Peter Scott's biography is a frank reflection of his conversion from wildfowling with a gun to filming with a camera. His observations are interesting, for they illustrate both the power and the pleasure involved in the technical process of inscribing animals on film and expand on the oft mentioned parallels between filming and hunting through the skills, rituals and technology of approaching animals unseen[13].

> "This involved achieving the power of death over the quarry without exercising it [...] This advance was no sudden change in my outlook. I was still too much captivated by the ritual aspects of wildfowling to give it up altogether. So many things went with the actual shooting - the beauty, the natural history, the exercise, the memories, and particularly the technical skills which in the course of years I had acquired" (Scott, 1961:173).

The skills and technologies of these naturalists meant they were able to approach certain animals unnoticed: "to achieve the power of death over the quarry without exercising it". This

[13]The early link between hunting and film-making is illustrated in the following quote by Theodore Roosevelt "More and more as it becomes necessary to preserve game, let us hope that the camera will largely supplant the rifle [...] The shot is, after all, only a small part of the free life of the wilderness. The chief attractions lie in the physical hardihood for which the life calls, the sense of limitless freedom which it brings, and the remoteness and wild charm and beauty of primitive nature. All of this we get exactly as much in hunting with the camera as in hunting with the rifle" (quoted in Schmitt, 1969: 146; see also Ryan, 1997)

meant they were able to capture footage of 'natural' animal behaviour only previously seen by committed naturalists and offer a view of nature without the apparent intrusion of humans[14]. The process of inscription is constructed as unmediated; the animal's image is captured but no power is exercised over the animal; the film-maker looks, but unlike the hunter, does not touch. Because the film-maker just observes and does not apparently intervene the images produced are able to transcend the moment of inscription and are universalised as natural behaviour. The practices of capturing animal behaviour on film are still ritualised and respected within the industry for achieving the integrity of the film, but like the practices of science, they are masked in the resulting representations. Thus the modest witnesses of science can enter the arena of natural history film-making. These representations of nature are made stable, mobile and combinable and are (re)presented in documentary form, in a way that mirrors the construction of a scientific text: "a visual set of inscriptions produced by the instrument and a verbal commentary uttered by the scientist" (Latour, 1987: 71).

This ability to look at animals without touching, clearly owed as much to the new instruments of film technology as to field skills of the film-makers. Contemporary Bolex and Arriflex film cameras were far more mobile than huge television studio cameras, enabling the camera to replace the gun in the naturalist's collecting equipment. However, there were still technological restrictions to the processes of inscription. Film stock required large quantities of light, limiting film footage to the day time. Lens magnifications were restrained by the ability to create perfect large glass lenses, meaning a naturalist had to approach close to the subject being filmed. Although this form of film-making was not limited to places were animals were enclosed, it was still restricted to sites and species where filming could take place in the daytime, and in close proximity to animals.

The early naturalist films were therefore dominated by footage of birds. Birds made good subjects as they exhibited behaviour during the day, whereas most European mammals are only active at night. It was easier to muffle the sound of the camera mechanism than to mask the scent of the camera operator, which also biased in favour of birds' muted sense of smell. Moreover much of this film featured footage of birds at the nest, where the presence of the animals could be predicted and hides constructed. Some individuals also specialised in obtaining the knowledge and expertise required to fully understand and capture footage of particular species and habitats. For example, Earnest Neal's work on badgers not only meant that he was a world renown expert on badgers, but that he was able to film some of their

[14]Peter Schmitt suggests that this has always been a goal of natural history photographers as well as film-makers, and stresses the importance of technology for achieving it. In early wildlife photography “Mans’ physical presence posed a barrier to his communication with ‘creation’s dawn. The wild creatures which met his eye were usually nervous and looked unnatural. Only rarely could he surprise then unaware. Serious hobbyists learned to fasten simple triggers to their cameras so that birds could take their own portraits. Day and night, such cameras stood watch over bird’s nests and woodland trails - patient proxies for impatient men. Thus nature lovers found a way to enjoy second hand the realities of nature which they might have otherwise not seen” (Schmitt, 1969: 140).

behaviour. Similarly, Eric Ashby's intimate knowledge of the mammals of the New Forest meant he was able to find locations where mammals were active in daylight and film their activity (Parsons, 1982: 106). This was an era dominated by the visions of these amateur naturalist film-makers[15].

These early films however, were rarely made with the primary purpose of transmission on television, and many of them showed no concessions to the demands of their new medium. Sequences could be shot from only one perspective and transmitted with little editing. However, any footage featuring animals behaving 'naturally' in their habitat was pioneering at this stage, and there was little need for additional action. Indeed, the early *Look* films record a number of television firsts: the first underwater film, the first glimpses of British mammals, the first footage of exotic species such as emperor penguins, the first live outside broadcasts from Slimbridge, and of course, the first film footage taken from inside the nest to reveal the parenting behaviour of woodpeckers as we have seen (Chapter 1). Heinz Sielmann's film of nesting woodpeckers, first seen by Peter Scott at the conference in Switzerland and brought back for transmission in January 1955, cemented the success of this form of natural history television. The film established the reputation of the small team in Bristol for innovative and academic natural history presentation; it introduced the important role that further technological innovation could play in wildlife film-making and it proved the popularity of the format with the public. The BBC did not collect viewing figures at this early stage, but the stories of the impact of this film are legendary.

> "There was clearly a thirst for this type of programming they got a, you know, a great number of people watching Heinz Sielmann's Woodpeckers, I expect you know that. They got more viewers than the Coronation or something like daft like that, and jammed the switch board and all that sort of thing" (John Sparks, interview 13.6.95).

The increasingly competitive television environment with the arrival of ITV in 1955, meant that producers at Bristol had to exert more control over their informal networks. It was however, the associations between naturalists and broadcasters in *Look*, rather than broadcasts from the zoo, which were formalised within the ethos of the new Natural History Unit. This early

[15]An anniversary programme made to celebrate the twenty-first edition of the series introduces the people and animals involved in these early film sequences. Transmitted at 7.50pm on 23rd of May 1956 with the title *The Twenty First*, the programme opens with scenics from Peter Scott's footage of Iceland and his film of birds including phalaropes and limpkins; then more familiar seals; Heinz Sielmann's pioneering footage of woodpeckers; and swans, flamingos and storks. Footage of mammals revealed hamsters, pine martins, polecats and koala bears. Further film of birds showed penguins, gannets and golden eagles. Other families of animals were represented by frogs and swallowtail butterflies. These short film extracts were counterpoised by cuts to discussions with Peter Scott in the studio. The closing credits introduce the early filming sources, listing film sequences by: Field Marshal Viscount Alanbrooke, Australian News and Information Bureau, Dick Bagnall-Oakley, BBC Film Unit, Sir Geoffrey de Havilland, Walter Higham, H. G. Hurrell, G. T. Kay, Captain C. W. R. Knight, Bernard Kunicki, Roger Tory Peterson, RSPB Film Unit, Peter Scott, Heinz Sielmann, William Sladen and G. K. Whitehead. The programme's film editor was Christopher Parsons and the programme produced by Brandon Acton-Bond (*Look*, 1956).

history incorporated codes for filming and representing nature based upon the modest witnesses of science, that endured for the next twenty years and still linger. However, the professionalisation of these representations of nature would also see the death of the amateur naturalist film-maker and the beginnings of tensions between naturalists and professional natural history film-makers.

4.5. Survival: Competition and Gaining Control

Television had proved its popularity with the broadcasting of the Coronation in 1953; the period 1951 to 1954 saw the number of television sets double to 3 million; and in 1955 the transmission signal could reach 90% of the population (Cain, 1992: 64). However, with the increasing popularity of the medium there was growing criticism of the BBC's monopoly and its accountability. The Labour government was against total competition, so a compromise was introduced. In 1955, ITV was launched, consisting of private production companies funded by advertisers, under a new public corporation - the Independent Television Authority - who owned the transmitters and retained ultimate editorial control. The ITA monitored programme content, ensured minimum public service standards and ensured accommodation between the two channels. The 'comfortable duopoly' of public service broadcasting in Britain between the BBC and ITV which remained until the 1980s was established (Lash and Urry, 1994: 124). In 1955 BBC television expenditure was still half that of radio (Cain, 1992: 64). The arrival of ITV did not demand direct competition over scheduling, but it did require the BBC to respond with greater flexibility and better allocation of television resources. As a result, by the end of the 1950s spending on television and radio at the BBC were the same. For natural history film-making, competition meant establishing more professional relationships with cameramen to gain control over the content of films, to retain the rights to film footage, and to develop means of demonstrating greater accountability to audiences.

Look had established an ethos and a direction for the natural history films that would endure through the next ten years. However, the traditional style, subjects and presenters of *Look* were not sufficient to maintain the initial successes of the first programmes. As Chris Parsons suggested:

> "The series had begun when the BBC had the only channel and the audience was distinctly middle class; now TV coverage was virtually nation-wide with an audience profile bulging into the great masses of viewers available in the industrial areas of the Midlands and North. BBC1 was taking a hammering as a result and the traditions and style of *Look* and its presenter did not ideally suit the new competitive scene" (Parsons, 1982: 263).

The most significant competition emerged from the Anglia Television programme *Survival. Survival* introduced a new style of presenting wildlife. This used an emerging generation of dedicated professional natural history film-makers like Alan Root, Dieter Plage and Des

Bartlett who worked on location overseas. *Survival* were able to present the wildlife spectacles and charismatic mammals of places like the Serengeti, displayed with dramatic soundtracks and music. The high costs of these production methods were recouped from sales of programmes to the United States; a secure market for wildlife films since broadcasting legislation had required a certain minimum of local or educational programmes on the networks (Daily Telegraph Television Guide, 13.2.92). These films were also specifically tailored to the new television viewers, aiming to appeal to a 'mass' audience which was value of to their television advertisers.

> "The BBC was doing what it did excellently and I think in a rather quiet way for perhaps a dedicated audience of wildlifers. And we set out deliberately - in ITV - to a make a mass programme that would grab a big audience - it had to grab a big audience to survive. We are making a programme which the ordinary person in Clapham South could switch on and enjoy and not feel it was for a lot of dedicated 'birdie-boys'" (Colin Willock, quoted in *Television and Natural History*, 1985).

Executives and advertisers at ITV carefully observed these audiences through innovations in ratings research. ITV monitored their audience through the Joint Industry Committee for Television Audience Research (JICTAR). This provided information for a commercial operation dependent on advertising revenue, producing statistics about the specific audiences available within a 15 minute segment for each advertising break, in order to set advertising rates. Additional information giving details of the 'type' of views watching allowed television advertisers to target their product, and to identify the types of audiences attracted by different television genres (Alvorado and Stewart, 1985). ITV needed to enrol audiences through institutionally effective measures of economic value (Ettema and Whitney, 1994; Ang, 1991). These measures put pressure on the BBC to compete with the ITV companies for a respectable audience share to support its statutory fee. The BBC's audience research department was therefore introduced after 1955 to monitor the number of people who had seen a programme, counting in total those who had watched more than half of a given programme[16]. These measures were useful for the internal allocation of resources, but were not widely published. The differing systems of measurement chosen by the ITV and BBC largely supported the status quo. The dual ratings remained in place until the early 1980s, when assessments of the accountability of this system reported that: "commentators observe with some irony that the methods on which each system is based consistently produce the most favourable result for those who pay for it" (Cain, 1992: 115).

Competition from ITV and *Survival* did, however, mean that the producers at Bristol needed to gain more control over their informal supplies of natural history footage. Producers at Bristol wished to commission new natural history footage where they could control film subject, sequence construction and copyrights to material. Most of the existing footage was of birds, with no establishing shots, little action, only short sequences, and it was owned by the

[16]Audience figures are included in the filmography, when available, for films after 1963.

cameramen. The results of this filming style were of immense interest to ornithologists, but it was difficult to construct a story from this material and it was of diminishing appeal to broader television audiences (Parsons, 1982: 65). The producers at Bristol decided they were no longer able to use material, filmed by amateur natural film-makers, which was not made specifically for television. "I was saddened by the realisation that this was probably the last time we would be able to use this great man's work [Viscount Alanbrooke], for his interest was in *taking* film of birds rather than *making* films about birds" (Parsons, 1982: 65, original emphasis). This distinction was taken forward into the development of the Natural History Unit with the recognition that "we should tailor our films to suit the medium" (Parsons, 1982: 46).

Commissioning and specially shooting material meant that the BBC producers could develop the story lines in their films, choose their subjects, as well as developing a library of material to which they would hold the copyright and could subsequently sell. This also meant moving away from a dependence upon amateur naturalist film-makers, as Desmond Hawkins suggests:

> "The trap that I think we had to get out of was that the availability of a particular film was what was dictating whether or not we did a programme on that subject. And I think what we all wanted to do was to recapture the initiative so that we would start the other way round and say, in the next winter season or whatever, the subjects that we would really like to do were this, this and this" (Hawkins, quoted in Wildlife Jubilee, 1982: 19).

Formalising the supply of natural history film-making, meant ensuring that there was a predictable demand. Desmond Hawkins therefore entered into negotiations with the BBC over establishing the informal associations of interested production staff at the BBC in Bristol into a Unit within the BBC. In the Spring of 1957 a Natural History Unit was established, self sufficient with its own producers, library and film editing facilities, consisting of eight permanent staff, and headed by Nicholas Crocker the west region's television outside broadcast producer. The Unit's new status assured that commissioning editors in London would expect the Natural History Unit to provide the majority of its natural history programming, and demonstrated a firm commitment to a quota of natural history on television. The designation as a Unit began to formalise the genre of natural history at the BBC:

> "A unit has a different status. It is allotted a certain amount of broadcasting time automatically and is expected to fill it. Producers within the Unit are confined to proposals that conform to the unit's general brief, but they stand a much higher chance of being allowed to make the programmes they want to make than they would were they not members of the unit" (Allaby, 1978: 3).

These new initiatives provided many successful films in the late 1950s and early 1960s for the Natural History Unit. Pioneering natural history footage from further afield was shown in *Look* and *Faraway Look,* often featuring specially commissioned material from increasingly professional wildlife cameramen like Heinz Sielman, Ron Eastman and Roger Jackmann. The

academic format of natural history was developed in the series *Life*, presented by Desmond Morris. There were new collaborations with organisations like Oxford Scientific films who were developing high magnification wildlife films. The Natural History Unit also able to mount its first overseas filming expeditions with the naturalist Gerald Durrell. A new generation of producers at the Natural History Unit developed their expertise in maintaining scientific contacts, managing relationships with cameramen, overseeing the stories and practices of natural history television and creating the emerging genre of natural history films.

4.6. Conclusions: The first networks of natural history film-making

The first networks of natural history film-making reflect a period of broadcasting opportunity. The lack of competition within the industry, the educational focus of the BBC and the audience enthusiasm for new the medium meant that producers in Bristol were in a strong position to shape the new visions of nature on television, despite a lack of television funding. The biggest uncertainty to overcome was the means of enrolling animals into the existing structures of television. These challenges resulted in programmes which looked to the zoo and the naturalist study as sites of the production of knowledge about animals, and locations where the new nature-culture hybrids of natural history films could be created. It was the footage of animals in their natural habitats, filmed without apparent intrusion through the skills of the naturalist, mirroring the discovery of animal behaviour in ethology, that shaped the images of nature in natural history films. These were able to present natural behaviour in the wild, without apparent intrusion; looking but not touching. These technique are summarised by Tony Soper as 'the Desmond Hawkins technique':

> "I reckon the best wildlife films have always been made by people who were best with their subjects, who were right up to their necks in it. People like Eric Ashby - I think he is the classic example of the Desmond Hawkins technique, of a *real* person who is completely at home with his subject. You can call him an amateur film-maker if you like, but by the time you put him through the editing and production process I think his material is as good as anyone's. And the reason is that he is prepared to spend a great deal of time setting it up, his foxes are *real* foxes" (Soper, quoted in Wildlife Jubilee, 1982: 7).

These techniques required time and immersion in the subject by 'real' people, who were not only skilled in filming, but also experts on their subjects, with the naturalist's ability to observe the natural behaviour of wild animals. The animals were 'real' animals, unlike the exhibits in the zoo. These practices followed a documentary tradition of naturalism, granting importance to the *silent watcher*[17], capturing action on location; the creative work involved in researching locations and setting up the shot and constructing films through editing and post production. The ability of these filming practices to inscribe reality, and the importance of science to natural history films was formalised in the first networks of the Natural History Unit. A paper

[17]This was the name given to a compilation of Eric Ashby footage transmitted in 1961.

written by Desmond Hawkins to the Board of Management, on the occasion of its fifth birthday in 1962, underlined the Unit's commitment to science. In what Chris Parson's called "the most important and influential document in the Unit's history" (Parsons, 1982: 173) Hawkins wrote:

> "The spirit of scientific enquiry must have pride of place. In handling this subject we expose ourselves to the critical scrutiny of scientists, and their approval is an important endorsement. Moreover, it is their work that throws up the ideas and instances and controversies from which programmes are made. We look to them as contributors, as source material, as consultants, and as elite opinions on our efforts. In short we need their goodwill" (Parsons: 1982: 173-174).

For some current members of the Natural History Unit, looking back to these early days provides an explanation for the unique position of the Unit. Crucially, due to its long and close affiliation with scientists, and the integrity conferred by scientific methods of inscribing reality:

> "We've always had a good relationship with the scientific world. If you go right back to some of our early programmes, the early films. First of all the very early nature films that were made at this place in the days of black and white. They were the results, very often, of amateur film-makers, but they were naturalists. They were scientists as well, some of them. [...] There was a sense of integrity about our films which is hopefully, you know, touch wood, is not too badly strained even today. We haven't been making fairy stories. We haven't been making Disney films" (John Sparks, interview 13.6.95).

However, the stories of these early years of wildlife film-making also begin to suggest what is excluded from these networks of natural history film-making. The move away from images of animals at the zoo, where animals could be seen interacting with presenters, meant the spaces where viewers could see themselves within natural history programmes were lost. The stunning sequences of natural history behaviour presented a view of nature only available to the specialist naturalist or film-maker. While these could be enjoyed by natural history audiences, they were not experiences that people were able to empathise with or seek for themselves.

Moreover, tensions between amateur naturalist and professional filmmaker emerged, as the BBC attempted to gain more control over the filming process, to compete with the wildlife dramas of ITV, whilst maintain a commitment to representing nature in the raw. The demand of television for film-makers with a better understanding of film grammar resulted in the death of the amateur natural history film-maker, *taking* rather than *making* films about animals. Their place was occupied by a growing number of professional natural history film-makers who endeavoured to provide the increased control over film style and content that the BBC demanded. Whilst the finished films still retained their appeal to the integrity and authority of science, the filming practices began to move away from those associated with the modest witnesses of science. Heinz Sielmann's film of the Belgian Congo was put together as a *Look* special featuring gorillas in 1960- *Congo Forest*. The uncut work showed that Sielmann had been using animals within enclosures in the forest and using live baiting to get his shots.

> "At the time the contrast was very marked between the methods used by Sielmann, the professional and Ashby, who was basically an amateur. From now there was to be a long, and at times uncomfortable, period of transition in which the unit slowly moved from relying on the pure naturalist capable of operating a camera towards a more calculated professional approach in which no shot is considered impossible and much depends on problem solving. The ethical issues had to be met along the way" (Parsons, 1982: 112-113).

I will return to these ethical issues in chapter 6, for this was a long transition and the tensions deepen as the networks of natural history film-making extend over space. The beginnings of these anxieties were confined to the industry. Indeed, it is the safe reputation of natural history films that endures from this period. The Natural History Unit may have appealed to the objectivity and integrity of science, but the images of nature were incorporated into a social and cultural context which stressed nature as a place of escape from the recent anxieties of war.

> "There was a mood after the war that I think helped us a lot, that people had really had it up to their chin in muck and filth and misery and worry and anxiety and death and destruction and all that. And there was a which somehow to find a paradise lost and regain it almost. And this I think was the appeal of the wild to those first audiences" (Desmond Hawkins, quoted in *Wildlife Jubilee*, 1982: 2).

V
Empire Building in an Age of Broadcasting

> "Then there came a period where there were early producers who started forming the show for the NHU and you would look to people like Chris Parsons and John Sparks and Richard Brock, some of them are still here. [...] They were very influential in those days. The big break though was definitely *Life on Earth*. *Life on Earth* is, you know, one of the greatest television events ever globally. And of course, David Attenborough is key, both as a producer and commissioner".
>
> (Alastair Fothergill, interview 16.6.95)

5.1. Introduction: Building the Network

Chris Parson's (1982) book celebrates the 25th anniversary of the Natural History Unit, telling the story of the Unit from its modest beginnings in the 1950s, to its development into a centre for wildlife film-making with the resources to produce the milestone series *Life on Earth* in 1979. This chapter uses a similar chronology to follow the development of the Unit after its inception in 1957, to the achievements of *Life on Earth*. It follows the complex web of broadcasters, presenters, producers, naturalists, and scientists as they make associations to build the actor networks of the Natural History Unit and establish the genre of blue-chip natural history films. From the 1960s to 1979 the networks of the Natural History Unit achieve increasingly global scope, supported by rises in BBC income and overseas co-production arrangements, aided by developments in film and camera technology, assisted by growing networks of research scientists and existing in a 'comfortable duopoly' with ITV. These networks extend the frontiers of the visible biological world across boundaries of geographical space, extremes of light and temperature and huge variations in size and speed. The culmination of these developments is the series *Life on Earth*, criss-crossing the globe to deliver the story of evolution to ever increasing numbers of television sets in corners of living rooms.

Life on Earth marks a point the Unit views as its 'coming of age'; a golden age of natural history film-making and the achievement of associations that continue to support natural history film-making into the 1990s. In 1979 the networks of producers, scientists, co-producers, technologies and broadcasting structures were in place which enabled the NHU to make the claims over time, space and history, seen in a global series like *Life on Earth*. The actor networks of the NHU forged in the 1970s still sustain wildlife film-making at the BBC; and the work of maintaining and adapting to changes in these networks can provide a basis for understanding tensions which the Unit faced in the 1980s and 1990s. This chapter illustrates how these networks were achieved, the genre of natural history films through which they were enacted, and the importance of David Attenborough as professional representative of this network.

For most of this period these networks of natural history film-making are uncontested and the translations of film-makers, scientists, animals and broadcasters remain secure. There is little competition from overseas film-makers or independents in the UK; there are few remaining problems with accessing animals due to the increase in scientific research sites; domestic audience figures for natural history films regularly exceed 10 million; and environmental issues and animal ethics, that were to dominate the media in the 1980s, remain relatively minor debates within the industry. The end of the chapter therefore marks the achievement of what can be seen as the 'mature' networks of the Natural History Unit. From these networks the genre of blue-chip natural history film-making emerges, through which the network speaks for others in its own voice and though which others, distant in time and space, are fixed through the strategic centre of the Natural History Unit.

5.2. Before *Life on Earth*

Television in the 1960s and 1970s was involved in a series of debates over broadcasting quality, and concerns about the effects of the media upon social and political life in Britain. These anxieties were expressed in the 1960 Pilkington Committee Report, which was critical of ITV programming, regarding it as trivial, violent and shoddy (Cain, 1992: 86). It was reflected in the growth of viewers associations like Mary Whitehouse's National Viewers and Listeners Association (1965). The 1960s and 1970s also saw a series of confrontations between national government and broadcasting officials over television's position in promoting morality and reporting domestic politics[18]. However, the Pilkington Committee gave a clear endorsement to the BBC. The continuation of public service broadcasting, with its responsibility to government through BBC Governors, and the educational commitment of its charter, was seen as the best way to balance political bias and maintain standards. The BBC license fee was raised to £4; the BBC was given transmission space for a second channel in 1964, which enabled it to keep serious programming in peak time whilst BBC1 competed with ITV; and the conversion to colour was heralded in 1967. These developments increased BBC income and allowed new innovations to be introduced by the Director General Hugh Carleton Green (1960-1969).

The need for the BBC to tread an uneasy middle line between its old public service paternalism and a new more competitive and contested environment, is documented by the broadcaster and writer Krishnan Kumar (Kumar, 1977). The BBC's ultimate responsibility to the state through the BBC governors, alongside its claims to represent the interests of a diverse nation however left it open to accusations of political bias. Kumar identifies the rise of a professional ethos in

[18]Cain (1992) reports particular controversies over schools programmes and sex education, *Yesterday's Men*, made after the Labour defeat of 1970, and *The Question of Ulster* (1972).

this period, which was centred around important broadcasting figures, able to act as keystones in the BBC's mediating role between different public and political interests. As he suggests:

> "More than ever before the BBC cannot afford to be identified with any section interest in society - even something as indefinite as 'high culture'. It must to some extent, go as the wind blows [...] What keeps it on an even keel, increasingly is the 'management' function performed by professional broadcasters" (Kumar, 1977: 247).

The BBC needed to balance its original pedagogic intentions with a more popular stance. Putting less emphasis upon public betterment and more upon entertainment meant that professional definitions of programme objectives and quality shift in this period. The 1960s saw the emergence of a different identity for the BBC, which changed the way it positioned itself between conceptions of the audience and private concerns of the producers. The model chosen was one that endorsed a purely mediating role for the producers, rather than a guiding one; stressing the facilitating skills of the television professionals, rather than the didactic ones. David Attenborough, as Director of Programmes in 1973, explained how he viewed the new role of the BBC:

> “The model that I find most valuable is that a public service organisation ought to be like a theatre in the middle of a town, and the broadcasters [...] are part of the theatre staff. And it's the job of that staff to find from society, from the town in which they are placed, a whole section of voices - the most prophetic, the most significant, the most amusing, the most dramatic, the most typical - and to enable those voices to be heard in that theatre” (David Attenborough, 1973, quoted in Kumar, 1977: 246).

Television programming became increasingly generic to serve its diverse audience, with now familiar formats for light entertainment, children's television, costume dramas, situation comedies, news satire, contemporary drama, regional news and documentary strands dominating the schedules. Well known broadcasting figures like Robin Day, Ludovic Kennedy and Kenneth Allsop are used to hold together and mediate this diversity: “It is these men who map out for the public the points of identification with the BBC, and who have become increasingly prominent in the broadcasting organisation” (Kumar, 1977: 239). This was also a period of documentary blockbusters. The relative wealth of the organisation, and the focus on key broadcasting figures, was brought together in a series of expert, but popular, documentary series which presented one man's history of art, science or nationhood. Kenneth Clark's *Civilisation*, Jacob Brownowski's *Ascent of Man* and Alastair Cooke's *America* are television classics from the late 1960s and 1970s. The success of these programmes was evaluated as much for the rising standards of professional broadcasting they demonstrated, as for their impact upon audiences. As Kumar explains:

> "The transition of broadcasting from an occupation dominated by the ethos of public service in which the central concern is with quality in terms of the public good, and of public betterment, to one dominated by the ethos of professionalism

> in which the central concern is with the quality of performance in terms of standards of appraisal by fellow professionals [marks] a shift from treating broadcasting as an end, to treating broadcasting as a means" (Kumar, 1977:25)

This period of broadcasting opportunity was taken through to the end of the 1970s by Director General Charles Curran (1969-1977). Television was largely left alone as government reports and criticism shifted to the reorganisation of radio (Cain, 1992).

This was also a period of expansion and definition for the Natural History Unit. During the 1960s and 1970s the NHU was able to build up its production networks: relying on growing numbers of scientists studying animal behaviour in the wild to provide access to animals; using a new wave of wildlife photographers to raise production standards; financing its production through overseas sales; and developing its production and administration skills. In the years up to 1976, when *Life on Earth* began production, the Unit had built up the experience, producers and opportunities which enabled it to think producing a series of programmes to tell a global story about the evolution of life on earth. *Life on Earth* was the culmination of developments in natural history film-making which had begun with the series *World About Us*. As John Sparks suggests:

> "It was fresh and interesting and it also led up to the days, for the Unit at least, of the first blockbuster *Life on Earth*. Most things had not been about, almost everything you looked at was something new. It was a new beguiling medium that everyone would lean over backwards to get on television. Money was also no problem because at the time the BBC's income was greatly in excess of its expenditure because of the conversion to colour. And, you know you could kind of do anything. [...] We sometimes in this department divide time, not between AD and BC; but between before *Life* and after *Life on Earth*. *Life on Earth* was the first blockbuster which was hugely successful and it showed the management in London that this little Unit here in Bristol which was then only barely 30, 35 people could make quality products" (John Sparks, interview, 13.6.95).

5.3. The *World About Us*

Many of the associations on which *Life on Earth* depended were established during the production of the series *World About Us*. This strand, featuring 50 minute films on natural history and travel subjects, was screened in peak time on BBC 2, from 1967 to 1984. *World About Us* was commissioned by David Attenborough, controller of the new channel BBC2 (1965-1968) and in charge of overseeing its conversion to a full colour service. David Attenborough commissioned a package of programmes to sell colour to viewers of black and white televisions including the series *Civilisation*, the snooker programme *Pot Black*[19] and the *World About Us*. *World About Us*, advertised as "a series of films from all over the world about our astonishing planet and all the creatures that live on it" (David Attenborough, NHU publicity brochure: iv), was placed at the start of the first full colour evening on BBC television on 3rd December 1967.

The technology of colour transmission renewed enthusiasm and opportunity for natural history films. As one contemporary reviewer observed:

> "To see the scarlet ibis bird of Trinidad whirling in clouds over the blue mud banks, and to know that they are real is to be made aware of how beautiful the world is and how little of it one has seen. It is to be filled with longing and discontent" (Peter Black, quoted in Parsons, 1982: dust jacket).

The new colour service offered a sense of spectacle that had previously been missing from black and white images of natural history. It was assumed that red would be the most striking colour to raise the profile of the new colour service, and the visual exhibition of natural history was underlined by the opening programmes featuring footage of volcanoes and firebirds (Parsons, 1982: 254).

The series *World About Us* was split between the Travel and Exploration Unit in London and the Natural History Unit in Bristol, both of whom had developed good intelligence links for tracking down the scarce colour film for transmission in the first run up to Christmas. The NHU was required to contribute 20 programmes a year for the *World About Us*. This demand meant it was sometimes necessary to transmit bought in films and the strand began a high proportion of bought in material from Jacques Cousteau, National Geographic and the RSPB film Unit (Parsons, 1982: 255). Gradually, the number of BBC commissions and specially shot programmes increased as the NHU reorganised its resources to develop the forms of film it had pioneered in *Look* into fifty minute colour specials. This new round of technological opportunity meant that the NHU was firstly able directly to 'repackage' some of its colour film previously transmitted in black and white, for example in a Sielmann special. Later

[19]Snooker was an obvious choice to demonstrate the potential of colour television and the frustrations of receiving this new service on a black and white set. Additionally it only required two fixed cameras and minimal cost.

programmes extended studies of animal behaviour used in *Look*, focusing on the life cycles of particular animals, or the communities of species found in specific habitats; using scientific advisors to provide up to date information on animal behaviour and new professional wildlife cameramen to present the best images available. These fifty minute programmes featuring all colour material to illustrate the lives and locations of a huge range of animals were to prove important in constructing the networks which would support the Natural History Unit into the future. These networks also changed the skills and the geographies of knowledge on which the Natural History Unit depended.

The Natural History Unit was able to maintain the commitment to naturalistic forms of film-making presenting 'natural' animal behaviour, also to increase the production quality of these images. It no longer relied on the combined field and filming skills of the amateur naturalist, but rather incorporated the expertise of professional scientists *and* dedicated natural history film-makers. In this way the NHU could extend the process of inscribing animals away from the limited expertise that could be mastered by one person, on individual species and or particular habitats. The growth of ethological research at field sites all over the globe, meant that animals were already under the watchful eye of scientists who could be used to guide film-makers to instances of animal behaviour. David Attenborough reflecting on his film making experience in *Life on Earth* and *Living Planet* suggests that:

> "Experts are probably of greatest value in simply finding animals in the first place. These days, when ethological research is being sponsored by universities all over the world, you stand a pretty good chance of finding a researcher somewhere who is actually studying the animal you are interested in, in the field. So you go to him and say - we would like to see an aggressive display of the alpha male in your monkey troop and he will reply - 'Fine, you want to see Fred. He usually does his stuff at half past four on a tree by the river'. He takes you down there and sure enough Fred does his stuff on schedule" (David Attenborough, quoted in Burgess and Unwin, 1984: 99)

These networks of scientists were accessible to producers of the *World About Us*, and also to their sources of bought in material. For example, Jane Goodall's primate research at Gombe was sponsored by National Geographic, who retained the rights to all her filmed material. The BBC's involvement with scientists was never this direct, but their relationship supported the profile of this form of scientific research, and scientist were keen to help: "people have been amazingly generous every time" (David Attenborough quoted in Burgess and Unwin, 1984: 99). Large research sites developed in the field were access to animals could assured.

> "You go back to the same places because it’s a very practical, you know, Because you can see them. Particularly the Serengeti where it’s the big animals in the big open spaces. But even things like rainforests. I think people tend to go to Costa Rica or Panama, or places in Borneo because you know there are scientists there and the animals are quite filmable" (Richard Brock, interview, 15.6.95).

The amount of data acquired on particular animal populations meant not only could the presence of animals be predicted, but so could the timing of their actions. However, although the films presented images of animals apparently performing naturally in the wild, many of these animals were habituated to the presence of people[20]. These images of natural history may have been captured without intervention, however, the claim to look and not touch does begin to seem questionable.

New filming technologies were also extending the limits of filming. The Special Facilities section of BBC Engineering Department in Bristol built a macro bench which enabled filming at magnifications of x10 to x32, and made features about the private lives of insects a possibility for the *World About Us* (Press Release, *The Start of Another 25 years*). The development of 600mm lenses meant that more animals could be filmed without the need to approach so near, and so again increased the choice of subjects. Infra-red photography produced grainy, but fascinating, footage of animals apparently in total darkness. Improvements in film stock increased the quality of film in low light levels and underwater, and remote control cameras further increased the ability of instruments to inscribe animal behaviour (These technological developments are outlined in Allaby, 1978). These technologies were exploited by a new wave of camera operators whose specialist film-making skills began to drive up production values. For example, the BBC was able to entice film-maker Alan Root away from *Survival*, and to support its own specialised in-house natural history cameramen.

The high costs of these production techniques were returned through increased income from new audiences and the sale of more expensive colour television licenses. BBC Enterprises in London was reorganised in the 1960s, and for the first time BBC commercial operations, like the *Radio Times*, books and programme sales, were intended to make serious contributions to the running costs of the BBC. The wildlife films produced by the Natural History Unit were a good proposition for overseas sales. As John Sparks explains, once the initial investment in filming has been made, there are no further costs and the value of the film endures:

> "Wildlife films on the whole have a good long shelf life in terms of their selling. You've got no actors so therefore there are no profits you have to share. You've got no in vision people talking so you've got no language problems. So I mean all these things mean that wildlife films are fairly good commercial prospect. And they pull in the audience" (John Sparks, interview 13.6.95).

[20] "Gombe, particularly, represented as the solitary world of National Geographic's and Gulf Oil's Jane Goodall, was for nine years a densely social, collective, international research site - perhaps more so than any other primate research site established by Western Observers. In 1972, about 50 scientific personnel - Tanzanian, European and Euro-American - lived and worked at Gombe. With their families and other staff, the population of the field station was about 100 souls, mostly living in individual huts in the forest. Between 1972-73, the study population of habituated named chimpanzees numbered about 14 adult males, 15 adult females, 19 dependent young, 2 adolescent males and 4 adolescent females. People from the community called 'scientists' considerably outnumbered chimpanzees at Gombe during the most intense years of research activity" (Haraway, 1989: 170).

The films pioneered in *World About Us* were the first wildlife films appealing to overseas markets. Companies like Warner brothers, National Geographic and Time Life expressed interest in co-producing those programmes for the series that featured an *international* focus. Co-production arrangements were made whereby companies would provide finance in advance in exchange for the rights to show the resulting programmes in their territories. The subjects and locations that were easily sold to these television executives and audience abroad were, in fact, fairly limited. The most popular films for overseas sales tended to feature the large, charismatic animals: the big cats, ungulates and elephants of the African Serengeti and the apes of the African and Asian continents, rather than the British birds and mammals that had been stars of early wildlife programmes. These constitute what Richard Brock calls the "National Geographic" animals, and David Attenborough the "romantic ones". As Attenborough suggests "Anyone who has been in our game for any length of time knows perfectly well that you are on a winner with apes, and by and large if your subject has more than four legs you are on a loser" (David Attenborough, quoted in Burgess and Unwin, 1984: 105). Attenborough focuses upon the popularity of animals like leopards, lions, penguins, elephants, polar bears whales and sharks with audiences; John Sparks however, suggests that this focus owes as much to the demands of television executives of commercial channels in the States as audience appeal in Britain: "in the States you can bring in co-producers on things like sperm whales, lions, hyenas, hunting dogs, and bald eagles. Sharks, oh say no more they'll take shark programmes. But if you come up against a programmes on Sulawesi it's actually extremely difficult" (John Sparks, interview 13.6.95).

The international attraction of these films was therefore defined according to the markets where they could be sold, rather than the geographical scope of their subjects. The overseas expansion of the market for wildlife films concentrated around Europe, the United States and Australia, as Adrian suggests:

> "It is perceived to be an international story because it can be sold internationally. It might not be an international story, [for example] one that is obviously an African one. But if it is for the big markets of Europe, and the States, New Zealand, Australia then it is an international story" (Adrian, interview 26.7.95).

In this period the global networks of natural history film-making become part of an international trade in wildlife films. However, this is an uneven flow of images, as Gareth suggests: "It's quite colonial the whole thing, you know basically the rich nations send out there cameramen to film the wildlife of the poor nations, and the local crews are quite often frowned upon because they're not very good, because they haven't been trained" (Gareth, interview 11.7.95). The trade in images of charismatic animals becomes global in scope, but dominated by the flow of images of the indigenous wildlife of 'southern nations' to television owning audiences of the northern markets.

The Natural History Unit was particularly adept at using their administrative and production skills to manage these extending networks. Producers like Richard Brock, Chris Parson, John Sparks, Barry Pain and Peter Crawford could use their scientific background and the name of the BBC to forge and maintain relationships with scientists. The BBC resources meant that they could invest in cameramen, studio time and technological innovations, and the overseas sales networks of BBC Enterprises enabled then to sell their product in the States, Europe and Australia. The producers at the BBC managed these relationship and ensured a consistent quality and supply in film-making. John Sparks explains "My role here is essentially to bring teams together, nudge things in certain ways, doing post-production, coming down heavy on the stories, quality, scheduling, and things like that" (John Sparks, interview 13.6.95). In the 1960s and 1970s, the Unit was able to recommand the initiative it had lost to *Survival* in the late 1950s. Elizabeth suggests this was due to the capacity of producers at the BBC: "Survival has gone along tramlines from the very beginning. It's had wonderful cameramen, but they haven't really had producers" (Elizabeth, interview 25.7.95). The experience of this cohort of producers at the NHU built up the expertise experience required to co-ordinate a programme like *Life on Earth* with complex financing deals, negotiating with hundreds of scientists, involving several filming crews in different countries, and moreover, bringing the results together into a coherent whole.

However, reflecting back on the genesis of *Life on Earth*, Elizabeth suggests that as well as producers, cameramen, money and technology, a pre-eminent natural history series was going to need something additional: a new figurehead for natural history that would reflect this professional status. In the 1960s and 1970s the programmes of Jacques Cousteau could obtain viewing figures of 14 or 15 million, which exceeded the achievements of the Unit. Elizabeth recalls the impact that his personality and story telling skills made not only on viewers, but also on producers in the Unit:

> "I can remember the Natural History meeting, where we sat and said, how can we make our programmes get audiences like that? And you've got to say it was personality, it was the French voice, it was the adventure, you know. Would somebody die when they went down, you know, 'x' thousand or 'x' hundred feet under the ocean? He was very skilled, you know, at story-telling, which is drama" (Elizabeth, interview 25.7.95).

Chris Parsons, then a producer with the *World About Us* had had an attachment to Arts and Features in London where he talked to David Attenborough, then Director of Programmes. Together they had sown the seeds for the idea of a mega-series on natural history to follow up the popular appeal of *Civilisation* and the *Ascent of Man*. However, it required David Attenborough to move from behind the desk to in front of the camera to provide personality, adventure and storytelling for the Natural History Unit. Attenborough had experience of filming and presenting natural history from his *Zoo Quest* programmes in London in the 1950s. He was a skilled story teller and keen amateur zoologist who was able to inject the appropriate

levels of drama and adventure into the specialist, natural history knowledge of the Unit. He had moved rapidly through the BBC as presenter, producer, channel controller and in January 1969, he had became Director of Programmes with editorial responsibility for both the television networks. In 1973, after eight years as an administrator he returned to freelance programme making with the travelogues and natural history series *Eastwards with Attenborough*. David Attenborough was one of the new television professionals who had grown up with the medium, both in front of and behind the screen, and who understood perfectly the constraints and strengths of television science, and how to balance an academic subject with popular appeal.

David Attenborough was, therefore, able to mediate between the different entities enrolled in the network, as an interested naturalist, a skilled presenter and writer, and a broadcasting professional. David Attenborough was provided a new figurehead under which the Unit could pull together to produce documentation of their coming of age. *Life on Earth* was a definitive and collective statement which summarised the Unit's experience, and David Attenborough was able to speak for the networks that the Unit had constructed up to 1979:

> "*Life on Earth* tells the story of biological evolution. It is more than just a major series through. In a sense it sums up the experience of the Unit as a whole, so that it becomes a kind of collective statement. More than any other programme or series, it is the property of the whole Unit, the kind of public declaration that looks curiously like a line drawn beneath all that has gone before." (Allaby, 1978: 4).

5.4. *Life on Earth*

> "In the late 1970s all these different strands of advancing technology were brought together to produce one of the greatest documentary series of our time. Written and presented by David Attenborough, it was nothing less than an all embracing natural history of the world. It also heralded a new phase in our story. The epoch of the blockbuster, financed internationally and screened internationally. It is called quite simply: *Life on Earth*" (Desmond Morris, quoted in *Television and Natural History,* 1985: 29).

1979 saw the launch of the biggest production from the Natural History Unit to date - *Life on Earth* - a 13 part series, written and presented by David Attenborough. It had taken 3 years to make, and was filmed in over 100 locations areas, in 40 countries in every continent, at a cost in 1979 of over £1 million. The series was transmitted on BBC2 at 8.10 on Tuesday evenings, and repeated at 7.15 on Sundays. The reaction indices for audience appreciation complied by BARB broke all Unit records; though viewing figures started from a relatively modest level they rose during transmission to reach a figures of 15 million by end of the series (Parsons, 1982: 352). It was co-produced by Warner Bros. and Reiner Moritz Productions, who purchased the rights for transmission in their territories whilst the BBC retained the rights to the rest of the world. *Life on Earth* has subsequently been transmitted to audiences of over 500 million people in over 100 countries (NHU publicity brochure, 1990). *Life on Earth*

established wildlife films as important part of the television industry and ensured the reputation of the Natural History Unit as a pre-eminent producer of natural history films. In 1978 the Unit employed 50 people, through radio still dominated slightly 100 programmes to television's 86 (Allaby, 1978).

Life on Earth was the first international natural history media event which was able to draw upon these newly established international networks. *Life on Earth* provided international appeal; it told an international story, and it could be financed and screened internationally. *Life on Earth* had confounded predictions that it would be too difficult for Americans, and had won an average audience of over 8 million for its 13 episodes, making it one of the highest rated series ever shown on PBS (*Discover*, 1985: 93; Kellert et al, 1985). It was a global series in a smaller world, one where developments in air travel made the prospect of filming in 40 countries viable.

> "The series simply could not have been made any earlier. It wasn't just the improvements in film stock and camera lenses that made the thing possible, it was also the improvements that had been made in airline schedules. 'In the 1950s and 1960s,' Attenborough says, 'it was extremely time consuming getting around the world. A series such as *Life on Earth* involved knowing that you could get a film crew anywhere in the world within 48 hours" (David Attenborough, quoted in the *Sunday Times*, undated).

Life on Earth also involved new filming practices. The Natural History Unit was finally in a position to decide what it wanted rather than what it could afford. David Attenborough had written the script assuming that anything was filmable in the last event. This verbal script was then taken out to relevant experts in over 200 academic organisations, and new research or extra problems accounted for. The story outline was to be filled in with completely new material all on film; no library footage was used as photographic quality was intended to exceed previous films. For the first time the filming practices involved more than one cameraman at a location with sufficient time and money to invest time and money into capturing the required shots. This application of human resources distinguished the quality of *Life on Earth* from what had preceded it; it was a development of commitment to obtaining the best images through naturalistic filming methods as much as technical progression. Reflecting back, Anthony identifies the breakthrough of *Life on Earth* as due to "I won't say particularly specialised techniques, because they weren't really, but devoting a huge amount of time and specialist cameramen" (Anthony, interview 3.8.95). The written script was depicted by some of best contemporary cameramen, including Peter Parks form Oxford Scientific films, Maurice Fisher, Martin Saunders, Rodger Jackman, Ron Eastman, Densey Clyne and Jim Frazier. In a sense, however, the style of the programme simply continued the tradition of the illustrated lecture.

The whole series, and each programme within it, is driven by the structure of a written text. The series is composed of thirteen programmes, but the story runs through all individual programmes, driven by a linear narrative that outlines the evolution of life from single cell organisms, working up through invertebrate life, vertebrates and then 'man'. The second half of the series focused upon important evolutionary concepts like symbiosis, commensalism and convergence. The titles of the individual programmes imply an idea of progress throughout the first half of the story, from: 'The First Forests', 'Masters of the sea', 'Invasion of the Land', 'The Cold Blooded Victors', 'Lords of the Air', 'The Rise of the Mammals', through to 'The Compulsive Communicators'. Moreover, it is a closed narrative that does not engage with the origins of its own story, or offer a role to the scientists who provide access to the animals, and for whom these narratives are still a matter for debate.

From the opening sequence of the earth from space, onto which the title *Life on Earth* is imposed, we are sure that this is to be a global story. The next title: *A Natural History by David Attenborough*, introduces us to the position of authority of the narrator with whom we are to go globe-trotting. The framework provided by the story of evolution divides the series into the major families of animals, and the programmes into the revealing of taxonomic relationships. The scope is huge, from bacteria and single celled organisms, through insects, reptiles, birds, mammals and apes, the phylogenetic relationships are traced out and illustrated in front of us. The series offers an authoritative overview of the system of nature. The key to understanding the mysteries of nature are amazing quantitative facts and mechanistic adaptations to environments, rather than speculations over animal behaviour. The actual processes of evolution are however, obscured by a passive phraseology in which animals "became", "developed", "appeared", or had "undergone changes", or where problems "were solved".

The role that individual animals play in the series is secondary to the story of species as a whole. This style of programme was also sufficiently innovative to require little further action. Reflecting back in 1990 David Attenborough concludes that "The thing about *Life on Earth* was that, if you found a rare species, it didn't have to do anything. It was enough just to show it" (David Attenborough, quoted in The Independent Magazine 29.9.90). The programmes therefore concentrate upon the physiological adaptations of an individual species, and within families they champion the extremes and the isolated oddities to render the evolutionary process visible. The shots of animals are often mid shots or close-ups. There is little contextual material, something which is especially striking in footage of insects and small animals filmed in the studio, where they stand out clear against a plain, blurred backdrop in the manner of biological specimens. In a tradition which extends back to taxonomic classifications, animals are interpreted within this system of nature through their morphological form.

The naturalism of the filming style used means that the only technical alteration to the film is a limited use of slow-motion. Its use to repeat and reveal fast action is always signalled by David Attenborough, even explaining to what degree that motion is slowed down. Whilst the series used and naturalised the framing devices of natural history, it also achieved huge compressions of time and space, though again the interpretation of this was signalled in pre-publicity. The press release for *Life on Earth* opens with the following advice for grasping the time scales involved in a 13 part series of 50 minute programmes: "It's difficult to comprehend the huge time scale of the series and David Attenborough suggests you imagine one year in which each day represents ten million actual years. On that basis, life begins in January, the earliest fossil jelly fish lived at the end of October and Man arrived during the afternoon of December 31" (Press Release, *Life on Earth*). The series also achieved amazing compressions of space, as David Attenborough moves out of one frame in the Africa rainforest, and reappears in the South America canopy the next. The locations in which animals are filmed assume a limited importance as their images represent a universal and global story, which transcends space. As David Attenborough suggests: "they tried to take a phylum or ecosystem and to show the different variations that it could assume *worldwide*" (David Attenborough, quoted in Burgess and Unwin, 1984: 100, original emphasis).

Life on Earth also introduced a different position for humans within natural history programmes. The human species becomes the end product of the story of evolution, divided into two biological justified categories: "for pre-industrial people, the environment reacts on them; and for post-industrial people, it is the other way around (David Attenborough, quoted in Burgess and Unwin, 1984: 107). Mechanistic explanations of evolution in animals can be extended to explain the cultural values of non-industrial peoples, whilst western 'man' occupies a new role as potential despoiler of nature in whose care all other living beings now rest. The pre-industrial nature presented by the first twelve programmes, is a nature untouched by people. The post-industrial vision of nature is one touched and despoiled by culture.

The exception to this model of the humanity is David Attenborough himself. His role as the presenter was the modest one of providing the cement between the written script and the film material. He was to appear in front of the camera only when it was necessary to convey information, or discuss a concept which could not be readily illustrated by the filmed footage (Parsons, 1982: 316). However, whilst the commentary that he writes for himself is clear and informative, but what makes it outstanding is the way that he performs it. As Ben suggests this is a persona that Attenborough has developed:

> "I think he has a unique ability to convey enthusiasm without being either embarrassed or embarrassing, of being able to explain things in simple terms without ever being, appearing to be patronising to his audience. I think his persona and his commitment to natural history comes through extremely well. It projects, he's a good actor, he projects, it acts it, he plays himself. He plays himself very well" (Ben, interview 14.7.95).

The role that Attenborough plays is the modest witness of nature, on the screen. His place in the programme proclaims television's testimony to presence. The powerful claim of David Attenborough in *Life on Earth* is 'I was there' or rather 'I am here', and his authority leads the viewer to trust the accuracy of the vision of nature given to us by the film-makers. As Silverstone suggests:

> "Television in general, and Attenborough's television in particular is not past tense. It is pure present. His statement is not 'I was there' but 'I am here'. And with such a statement Attenborough is reinforcing the central claim of all television, fact or fiction, fantasy or reality, both to be present and to be of the present" (Silverstone, 1986: 92).

Ironically though, the most memorable sequences of the film showed Attenborough actually interacting with animals. The footage showing David Attenborough wrestling with gorillas. Crouched behind the gorillas, he whispers with evident delight and anticipation, on the amazement of exchanging communicative glances with the apes. David Attenborough is hesitant about the way that this was filmed, stressing that it had not been scripted, and it was included against his better judgement (Burgess and Unwin, 1984: 109). These sequences nearly did not make it off the cutting room floor at the time; John Sparks is reported to have viewed the rushes and exclaimed that "we can't possibly use any of this stuff" (Parsons, 1982: 347): it looked as if they were using tame animals. This footage is perhaps one of the most enduring images of natural history, perhaps in some ways the pleasure of this sequence echoes that derived from watching animals interacting with presenters in the zoo. However, this was not a form of interaction with which audiences could emphasis. It was not an experience they could seek to emulate, and moreover, David Attenborough's presence of the screen mediates between the animals and the audience, as Donna Haraway suggests:

> “In Attenborough’s film, the viewer cannot identify with Attenborough, who whispers the audience into the film, constantly turning his back, actively drawing back the curtain like a theater master. It is not the drama of touch that fills the screen; it is Attenborough, the master of ceremonies. Attenborough reveals his virtuosity in an orgy of touch with a blackback male [...] This is the theater of male exhibition” (Haraway, 1989: 401).

David Attenborough was not only able to balance the public and professional aspects of broadcasting, but also to mediate the relationship between nature and post-industrial 'man' in the hybrid form of natural history film-making.

5.5. After *Life on Earth*

Life on Earth moved natural history television from its regional broadcasting associations into the centre of the television industry, brought the Natural History Unit recognition as a fully

professional provider of natural history programmes and the Unit was designated a BBC Department[21] in 1979. *Life on Earth* changed the financial status of natural history programmes, the position of the Natural History Unit within the BBC, and the relationship of natural history programmes to a national and international audience, cementing the associations which had developed during the productions of *World About Us*. As Oliver summarises:

> "I think that [it] changed the general public's perception of natural history and I think that it probably changed the way people within the industry thought as well. Natural history suddenly became really serious, intellectually really serious, but also as part of the entertainment industry, really serious" (Oliver, interview 13.7.95).

The financial success of *Life on Earth* made it "clear that we would be able to get the money and support for another series" (Desmond Morris, quoted in *Television and Natural History*, 1982: 34). *Life on Earth* was followed by the *Living Planet* (1984), and later the *Trials of Life* (1990) which together form the Life Trilogy. The co-production arrangements which had begun to support the World About Us, became firmer commitments following the success of *Life on Earth*. *Life on Earth* set a pattern of finance and a style for subsequent programmes exemplified in the series Wildlife on One (1977) and the Natural World (1984). Many of the partners developed in this period still supply funding for Natural History productions, as John Sparks explains:

> "Co-production arrangement with WNET, Channel 13, New York, who are still our traditional co-production partners for the *Natural World* started up as a result of *Life on Earth*. *Flight of the Condor* and, my series, *The Discovery of Animal Behaviour* were the first major co-produced series from the States following *Life on Earth*. And from that their relationship with the *Natural World*, which continues to this day. Then, of course, *The Living Planet* followed, *Trials of Life*, *Private Life of Plants*" (John Sparks, interview 13.6.95).

Wildlife film festivals also supported this form of natural history film-making, awarding films that excelled in cinematography and demonstrated new animal behaviour. Wildscreen began in October 1982, aiming to maintain and define quality in blue-chip wildlife film-making, to raise the profile of this form of film-making and to export standards abroad. The Natural History Unit won a number of awards at festivals, and they also bought in films viewed at these festivals for transmission in the new strands of *The Natural World*, which concentrated on fifty-minute animal behaviour films, and *Wildlife Showcase* which featured bought in material from overseas blue-chip wildlife film-makers.

Life on Earth provided a broad basis of good quality film for the Unit archives. As well as making sales of the complete programmes the Unit could now draw upon a wealth of material that had not been incorporated in the finished product. The trims from *Life on Earth* featured

[21]Somewhat confusing although it is officially a BBC Department, everyone still refers to it as 'The Unit'.

high quality film of a huge range of species for which the Unit retained the rights, and could be used in further programmes or sold. This library of trims meant that the programme provided not only immediate critical and popular success, but also a source of enduring value upon which to develop further programmes. Whereas programmes from the era of *Look* are of interest only as archive; the programmes, videos and trims from *Life on Earth* continue to hold commercial value. Although some material has become dated through developments in filming the series continues to sell on video and overseas.

With *Life on Earth* the stories of natural history film-making move from the realms of history through to the present in terms of members of the Natural History Unit. Of the producers on *Life on Earth* in the late 1970s, most are still involved with wildlife film-making. At the time of our conversations in 1995, John Sparks was series producer on the *Natural World* and Richard Brock was working on a pair of programmes on environmental issues that would be transmitted on the BBC, although he finished them as an independent producer. The executive producer of *Life on Earth* Chris Parsons, went on to become the head of the Natural History Unit. He is now working in wildlife film-making in Bristol as an independent producer, pioneering the development of IMAX film technology.

Life on Earth also brought into the public sphere a corpus of biological knowledge that has been influential in the career choices of a number of younger members at the Natural History Unit. In a comment that mirrors the coming of age of the Natural History Unit with *Life on Earth*, Iain accounts for the influence of David Attenborough in his interests “Attenborough's the one who, who taught you, and told you and, you know, informed you" (Iain, interview 19.7.95) The quote illustrates how the influence of past programmes and people begins to permeate through the Unit, providing the benchmark for the next generation of natural history programmes to build upon.

Life on Earth was in many ways the culmination of a golden age in wildlife film-making. For the Unit it marked the establishment of international recognition, and internal reward in its designation as a BBC department. The era had seen a growth in the budgets for production, in the geographic scope of films, increased resources at the BBC, and an increasing audience, and few restrictions. It was still a era of public service broadcasting; the BBC professional ideology supported educational and entertainment principles rather than merely ratings, ITV still functioned under a programme quality franchise and there was still security in the American market. It is not surprising that these days are regarded with nostalgia, though even then there was evidence of the problems that the Unit were later to encounter, and some of the issues that were excluded within these networks.

> "In those far off golden days of the sixties and early seventies a reputable wildlife cameraman could shoot pretty well anywhere without either being shot back at with an automatic rifle (perhaps an acceptable risk), or being held to ransom by

> some wildlife authority for a filming fee that his producer would view as an unacceptable risk. In those days the trees in the tropical forests still stood dense and tall. On the plains and woodland savannahs, the larger mammals enjoyed a similar richness and diversity. We film-makers were aware that we were very fortunate, even though we knew we were recording the end of an era. Indeed there was a compulsion to record the close of that era and thank heavens we did. In one sense wildlife film-making was then relatively easy. [...] Can we in the future ever again expect to see anything out of Bristol as toweringly excellent as '*Life on Earth*'?" (Willock, 1993: 13).

5.6. Conclusions: Networks and Exclusions

Life on Earth provided a form of natural history programme through which the networks of natural history film-making could be secured. The associations involved in the production of the programme involved support from the BBC, co-production finance and the assistance of scientists. These enabled the Unit to enrol audiences at home, markets overseas and, most importantly, animals into the networks. Control of the networks was managed by a new professional ethos of broadcasting, professional presenters and producers. This ability to enrol new entities into networks involved the redefinition of other expertise and entities through new processes of translation. The production of *Life on Earth* involved linguistic translations as a new language of professional natural history was developed, and geometric translations as the genre of blue-chip natural history extended over space. These translations not only changed the internal experiences of the Unit, they also introduced external pressures.

The genre of wildlife films still owed much to pioneering processes of inscription at the Natural History Unit, developed during *Look*. This focused upon naturalistic forms of film-making where effort is invested in being in the right place at the right time to witness animal behaviour. However, these skills could only be extended by dividing expertise of finding the animals and filming the animals between the now professional activities of animal ethology and natural history film-making. This enabled the point of inscription to be removed from the point of production, yet this expansion did involve exclusions. Natural history film-making was no longer about being a naturalist. Indeed, Gareth suggests that these skills now had to be largely forgotten in order to succeed as a film-maker.

> "When you start work you're doing research and you just go to the library and you're looking up papers and you're phoning scientists and you're employed as a biologist to start with. That's why so many people in this Unit are actually biologists with zoology degrees or PhDs, because initially you're not employed as a film-maker, you're employed as a biologist. But as time goes on you get more and more film experiences and forget all about your biology that you leant. And it all becomes a bit of a sort of haze from the past. And you then become a film-maker. And you get to the stage where you're making the programmes. And you're employing someone to do the research for you and find out what the latest information on snakes or whatever is" (Gareth, interview 11.7.95).

David Attenborough himself regrets the distance that this brings between film-making and the thrill of scientific discovery: "I have never had that [I have been] watching other people do it. But I haven't done it." (David Attenborough, quoted in Burgess and Unwin, 1984: 111).

Life on Earth also involved geometric translations, as the networks of natural history film-making gain an increasingly global reach upon nature. In an era which saw the development of the American and Russian space programmes, the first photographs of the earth from space (Cosgrove, 1990), and the first awareness of global environmental change, *Life on Earth* takes its place in documentary and environmental history, re-visioning global awareness and introducing a new view of the world.

> "In the earliest years of documentary we saw the explorer-documentarist lead the way providing glimpses of the exotic and faraway. The new technologies vastly expanded his role. He could take cameras into undersea worlds of astounding beauty, and also into other worlds. He could show, from regions of the moon and beyond, shots of our own earth, a green oasis in endless nothingness. [...] Such ventures stirred increasing concern for spaceship earth and its blessings, seemingly so unique and perhaps more fragile than was thought. Addressing this concern was one of television's most awesome achievements, the BBC TV series *Life on Earth* (1979), in which David Attenborough criss-crossed the globe, pinpointing the rise and decline of innumerable species" (Barnouw, 1983: 297).

However, whilst the geometric translations of the networks of the Unit criss-crossed the globe, they did so through specific sites whilst also leaving spaces. This global reach on nature was not a surface, but was simultaneously global and local through nodal points within these new geographies of knowledge. The locations of filming tended to be site specific, and film-makers returned to the same sites on the basis of research stations, contacts and previous experience. For many filming trips California thus became the desert, North Carolina the swamps. The rainforest is represented by Costa Rica, and Panama. Borneo represented Asian tropical forest. There were various sites in Europe and Australia and, of course, there was the Serengeti, where groups of wildlife cameramen became permanently located. These were the areas where nature could be best controlled for film-making practices, yet they were also the ones presented as the wilderness settings for most wildlife films.

This was the contradiction of the new global scope of the natural history. Within these global networks of nature, supported by blue-chip natural history film-making, there is little opportunity to articulate local solutions to the fragile sense of responsibility their global vision suggests. The new professional qualities of wildlife footage and the international focus of the markets for natural history films meant it becomes difficult for an individual country to produce a programmes featuring its own wildlife. As Adrian explains:

> "It’s hard to make English programmes. Just as it’s hard for the Germans to make German programmes or Norwegians to make Norwegian programmes because

> there isn’t enough money to do it properly, just from their own countries, it has to be international in terms of making a profit" (Gareth, interview 11.7.95).

These exclusions also caused problems for the production of films with an environmental focus. The separation of nature and culture within blue-chip natural history films constructed a view of nature that is neutral, value free; a nature without people, and a commodity without language problems. Environmental issues could not be addressed within these programmes. The Natural History Unit's account of the environmental responsibility of its films, thus becomes incorporated into the blue-chip values. As David Attenborough suggests: "My job as a natural history film-maker is to convey the reality of the environment so that people will recognise its value, its interest, its intrinsic merit and feel some responsibility for it" (David Attenborough, quoted in Burgess and Unwin, 1984: 106). Either that or "you do different programmes" (Attenborough, quoted in Burgess and Unwin, 1984: 108). However, the associations developed through the networks of natural history film-making mean that it is now more difficult for the Natural History Unit to make different programmes.

VI
The Ethical and Environmental Responsibilities of Wildlife Film-Making

> "I think more recently people who have shaped it [...] Certainly, John Downer, through the techniques that he developed in *Supersense*, was very novel. ..... I think that there are a number of technical breakthroughs that have made the series outstanding. I think that *Supersense* was a really outstanding series because of the enormous technical breakthroughs that that series achieved"
>
> (Alastair Fothergill, interview 16.6.95)

6.1. Introduction: Animal Images and Animal Rights

The period immediately after *Life on Earth* (1979) was dominated by the continuation of blue-chip natural history film-making. Blue-chip films provided the main format for the 30 minute strand *Wildlife on One* (from 1977), for the new 50 minute strand on BBC2 *The Natural World* (from 1983[22]), the mini series including *Kingdom of the Ice Bear* (1985), *Flight of the Condor (1982)*, and the remainder of the *Life* Trilogy: *The Living Planet* (1984) and *Trials of Life* (1990). This period cemented the reputation of the Natural History Unit for blue-chip natural history film-making and in many was a very successful extension of the expertise and associations that were developed in the production of *Life on Earth*. The films with which the Unit followed *Life on Earth*, continued to be based upon naturalistic forms of film-making, using methods of inscription which aimed to emulate science and using scientists themselves to provide access and expertise on animals. The Unit began the first of its next 25 years with an output of more than 250 radio and television programmes, under the leadership of John Sparks, who had replaced Chris Parsons as Head of the Unit. John Sparks, previously producer on *World About Us*, *Life on Earth* and the *Discovery of Animal Behaviour* (1982) continued the Unit's commitment to blue-chip natural history film-making.

However, the Natural History Unit also had to innovate within this format. The competition from other wildlife film-makers and for audiences which had previously driven innovation began to intensify. Changes in broadcasting put pressure on the BBC to cut costs and increase revenue from outside the license fee system. The BBC was put in more direct and very public competition with ITV following the changes in audience ratings, and the arrival of Channel 4 introduced further competition. Science was changing rapidly, with establishment of further research sites studying animal populations and new research opening up further stories on animal behaviour and perception. This professionalisation of ethology, however, also introduced further costs which had to met[23]. Stories about species loss and habitat destruction

[22]*The Natural World* took over the fifty minute wildlife slot on BBC2 from *The World About Us*.

[23]"In the early days of television in the 50s and early 60s, I mean people would do anything to get on television they would stand on their heads. And therefore, if I as a regional television director or producer who approached scientist in those days and I wanted to make a film about you, 'Oh fantastic, we'll open the doors. What can we do?. If you did that today, the university or a field centre facility fee would be

were also rapidly gaining public attention and the focus of natural history film-makers. Throughout the 1980s environmental reporting in the press and on television evolved to a point where all the major newspaper (including tabloids) and new programmes had their own environmental correspondents. This developing news coverage was increasingly global in scale, culminating in a series of global stories over habitat destruction and biodiversity loss (Hansen, 1993; Harrison and Burgess, 1994).

The response of the Natural History Unit to these challenges was reflected in two different moves. There were further innovations within the blue-chip natural history film-making tradition in *Supersense* (1988) which moved this form of presentation further towards entertainment. The Natural History Unit also experimented with a series dedicated to environmental stories, *Nature* (from 1983). However, this contradictory movement brought out tensions within debates over the environmental and ethical responsibilities of the Natural History Unit. There were debates over the responsibility of the Unit to represent environmental issues; and criticisms of the Unit's approach to environmental issues were widely published in the press (Mills, 1989; Pearce, 1989). There were also debates within the industry about the film-maker's responsibility to animals, environments and audiences with whom they were involved during the film-making processes as some natural history films moved further towards entertainment. As the results of the Unit's representations of nature become more controversial, so there is more attention to the filming methods. This period reflects a prolonged negotiation over the environmental responsibility of the Unit, of the place of animals within filming process and who is privileged to speak for what is 'natural' behaviour, as the NHU becomes enmeshed in the tussles of the long networks of science, the media and conservation. The relative failure of the series *Nature*, and the phenomenal influence of the series *Supersense* within the industry, were shaped by the networks of the Natural History Unit and their dependence upon blue-chip natural history films showing nature in the raw.

1979 had been a definitive year for the Natural History Unit. It was also to be a defining point for the BBC. The election of Margaret Thatcher as prime minister had bought out hostilities between government and the BBC, which erupted with particular ferocity in current affairs programmes over the IRA, and Panorama, but were underlain by wider issues. Margaret Thatcher rejected the consensus on which the comfortable professional ideologies and public service duopoly between ITV and BBC was based, instead striving to promote choice through market competition. Her dislike of the license fee, and desire to see advertising revenue support the BBC by the end of her term in office were well known. The political and personal animosities of the long and difficult transition at the BBC that began in the 1980s are documented in Horrie and Clarke (1994).

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charged for this that and the other and you would have to agree contracts, copyrights, and who has editorial control. Broadly speaking it's just become more professional" (John Sparks, interview 13.6.95).

The Peacock Committee of 1986 was to reject Margaret Thatcher's drive to introduce advertising in the BBC, but it was the beginning of a turbulent time for broadcasting, overseen by Director General Alasdair Milne (1982-1987). The BBC was short of money: high union wages and inflation had counteracted the increased revenues of the 1970s, and with no government support for license fee increases the BBC had started borrowing money for the first time by the end of the 1970s. The Annan report of 1977 had also demanded more financial and audience accountability from both ITV and the BBC. One of the first measures to be implemented following the Annan report was the standardisation of audience figures. In 1981, the Broadcasters' Audience Research Board or BARB (a limited company owned jointly by the BBC and the Independent Television Companies Association) was commissioned to produce quantitative and qualitative research for both the BBC and the ITV. The AGB (Audits of Great Britain) who had previously supplied quantitative data to the JICTAR continued to produce the data on audience size[24]; and the BBC research department extended its qualitative research to include ITV output. These standardised measures of audience response were used by both ITV and BBC, and increasingly circulation of these figures in the press brought the two organisation into very public competition, as the BBC fought to maintain the legitimacy of its license fee (Alvarado and Stewart, 1985).

The BBC also had competition for its programmes on BBC2 with the launch of Channel 4, in 1982, as a speciality broadcasting channel, whose finances were guaranteed by advertising revenue from ITV. Channel 4 revolutionised the television industry by breaking the link between production and transmission. The channel did not have its own studios, occupying merely a publishing role. This resulted in a large increase in the number of independent production companies, working on a small scale, existing often only for the duration of a project, and without the overheads of in-house cameramen, studios and outside broadcast units of the BBC. The low cost of these independent productions further demonstrated the inefficiency of the duopoly producers to government and industry commentators. The BBC and ITV began to explore ways of breaking union power, cutting overheads and employees to increase economic flexibility (Lash and Urry, 1994: 119), as well as developing their commercial interests to maximise income. The Natural History Unit was further affected by changes in the international market for wildlife films. The strong associations developed between American networks and the NHU through co-production meant that increased supply and decreased demand in the US market for wildlife films impacted directly on the income for

[24]Viewing figures are expressed in million viewers, audience share and audience appreciation indices. The ITCA claimed a potential audience of 51 million viewers in 1983. Quantitative data are derived form a sample panel of 3, 000 homes. The sample is deemed to be representative as a result of an annual establishment survey of 20, 000 homes which establishes a national pattern of variables relating to population structure, colour television and VCR ownership. The television set in the house of each member of the panel is then fitted with a meter which records how long and to which channel the set is switched on. Methods of collecting this material have involved wax coated paper, dispatched weekly by panel members, through to electronic relay of information from every set overnight via telephone lines. The information is then compiled into weekly Network reports which are sent out to BARB subscribers (Alvarado and Stewart, 1985).

the film production. The previously buoyant market in the States contracted markedly following increased channel competition and the relaxation of educational quotas[25].

The income derived from BBC Enterprises had risen from £234 000 in 1960 to £23 million in 1982 (Cain, 1992, 117). BBC Enterprises had originally existing to manage the finances of the *Radio Times* in 1923, but as the income from the license fee fell in real terms, it was managed on a more commercial basis, raising money from the sale of books and videos in Britain and the sale of radio and television programmes abroad (Cain, 1992: 118). During this era the ability to exploit materials and technology in secondary formats would begin to become of great important to the Unit. The Natural History Unit appointed the previous head Chris Parsons, especially to develop the commercial opportunities. Chris Parsons became Head of Natural History Development; responsible for the development of the Unit's international affairs, and in particular, the secondary exploitation of its programmes, libraries, research material and expertise, as well as technological developments. Parsons was also involved in the co-ordination of BBC Enterprises and BBC publication activities. The first phase of this development saw the launch of the *BBC Wildlife Magazine* in 1983, then the only international wildlife magazine generally available in Britain. This provided additional information to subjects covered in programmes, photographs and articles. Other initiatives included identifying wildlife sequences, expertise and technical skills which could be sold to advertising companies and commercial videos; and pioneering video sales with David Attenborough's video book of *Garden Birds* in 1981. David Attenborough became not only a figure-head able to balance the expert and popular appeal of the programmes, but also a valuable and instantly recognisable brand name.

The economic flexibility of Channel 4 allowed it to compete with BBC for slots and scheduling for wildlife films. The Unit also was facing new competition from the Independent company Partridge[26]; established in London and later to follow the Natural History Unit down to Bristol. Partridge, under the leadership of Michael Rosenberg, were competing with the BBC by investing hugely in blue-chip natural history films. The flexibility of Channel 4 meant that Partridge were not only able to compete on the apparent territory of the NHU, but also to respond quickly to the growth of opportunity to schedule an environmental series: *Fragile Earth*. This presented environmental stories, with blue-chip production values, and proved to be a success with audiences on Channel 4, and at award ceremonies.

> "Partridge, in their early days when they started making *Fragile Earth*, swept the board at Wildscreen. And they won best film for I think two, three Windscreens in a row, which for a small production company is enormous achievement. And *Fragile Earth* was a huge

[25]*T*he 1985 Wildlife Film-Makers Symposium discussions about the US market with one delegate contributing the "apocryphal story of an American Programme Buyer turning down yet another wildlife film on the grounds that 'they lose money', unless, he added 'you can show me a frog with tits *and* it can water ski.'" (Eyepiece 6(6): 252), BBC Natural History Unit Library.
[26]The name Partridge apparently derives from its intended original location in Pear Tree Lane in London.

> landmark in Natural History Film-making. *Fragile Earth* looked at whole habitats and what was happening to them. And, really gave this sense of a place, caring about the whole community. And those films were brilliantly produced" (Ben, interview 14.7.95).

The Natural History Unit, with its domestic and overseas contacts; long film-making experiences; research material and archives; and the scientific background of many of its staff, seemed well positioned to grasp the initiative of environmental film-making. *Nature* was therefore launched in 1983. The first series was produced by John Sparks, presented by Michael Buerk and shown on BBC2. The format of this first series was a magazine news style programme, presenting the environmental stories which concerned natural history, aiming to balance the good and the bad news. *Nature* ran on and off for the remainder of the 1980s. However, it never achieved a stable format, nor attracted sufficient audience, and rather than a milestone in the development of the Unit, several people suggested it was a millstone.

> "*Nature* I thought of, but then I thought that it hasn't really done anything. It should have done something but it hasn't. I don't think that it has really had an effect. [...] I suppose the only thing that I can say about it, is it probably did a disservice in that people are terrified of now touching the environmental subjects within the Unit, because they know that they are going to get low viewing figures. Whether that is the fault of *Nature*, or whether the fault of changing climates, I don't know. I'd like to say it had had an effect. It was the only conservation programme that we put out" (Jenny, interview 21.7.95).

I will return to *Nature* at the end of the chapter. Firstly, though I want to introduce *Supersense*, the series from this period that was mentioned by everyone as a key moment in the Unit's History and the next benchmark of quality for natural history film-making. *Supersense* was able to bring in the audiences figures previously enjoyed by blue-chip films (most programmes reaching over 10 million). It attracted co-production from Australia and the States. The amazing sequences of animal behaviour it captured could be sold on video and for advertising, as could the expertise developed. The innovations of *Supersense* meant that the visual emphasis of blue-chip films could be extended through the ability of a new form of directing which controlled animal behaviour and obtained the most visually appealing shots possible. This was a new form of control within the networks of natural history making, which meant that the NHU was able to accentuate the dramatic potential of images of animals through new methods of inscription and post production techniques, representing a new relationship to animals.

> "*Supersense* was the culmination of the work of a very bright young director called John Downer. And John is a very strong director and doesn't like leaving it to chance that he will get good shots. He loves playing about with strange lenses, and using electronic effect, using electronic trickery. You know, the miracle of television in order to bring amazing pictures to the screen. John wanted to sort of amaze people. He wanted to get inside a nest and he wanted to fly with birds. And he wanted to get underwater" (John Sparks, interview 13.6.95).

However, by introducing more control into the processes of inscription, *Supersense* also raised new issues. The film-making practices required to capture these sorts of images moved

processes of film-making away from methods of inscriptions which mirrored observational sciences, to ones that bore parallels with the directing process in feature films and the places of inscription in the zoo. As John Sparks continues:

> The only way he could do this was by using what I call 'nurtured' animals. Controlled animals. And *Supersense* was sort of the culmination of these techniques, whereby, with extreme, with extreme artifice and not just by building sets and using controlled tame, animals who have been handled and whatever you call it. But by using electronic switching techniques, electronic painting and so on" (John Sparks, interview 13.6.95).

The ethical issues which emerge from the making of *Supersense* can be traced to the ambiguous position which animals now inhabit, both within the networks of science and the networks of mainstream television entertainment.

6.2. *Supersense* and the Supernatural

> "Flying birds are filmed from model aircraft, parascenders and moving vehicles. Lions are tracked by specially developed camera buggy disguised as an animal. Periscopes and probe lenses, fibre optic light guides, miniature and remote cameras all become normal tools of the trade. Time lapse and high speed cameras are used as never before; and x-ray, infra-red and ultraviolet cameras are brought in from the fields of medicine. To further help the viewer experience the sights, sounds and impressions of the sensory worlds of animals, a new form of video effects has been devised to replace conventional graphics, and the sound track is specially treated. Even the title music is composed entirely of animal sound" (Press Release: *Supersense*).

As soon as you start watching an episode of *Supersense* it is clear that you are in a new arena for natural history film-making. Gone are the clear titles of *Life on Earth* with their assured, confident, yet staid graphics of global unity; in its place we have an equally positive, yet more impressionistic, sequence of animal metamorphosis and video effects, overlaid by modern music. The series opens not with the usual introductory shots featuring David Attenborough on location and in camera, but with a taste of what is to come. We begin by flying alongside birds over a gaudy fairground. We enter into the scene through a variety of senses and different animal guises, moving beyond an assured naturalism, into a sensory realm, to look at the world and ourselves through the senses of other animals aided by expressive graphics, point of view shots, dramatic sequences and unusual camera angles. Thus begins the dizzy journey through the sights, sounds, scents, time perceptions, sixth senses and psychology of the animal kingdom. Drawing upon new developments in animal neurology and psychology, as much as natural history, through stories which take us into the heart of how the world is experienced by animals the programmes extends the perceptions of what it means to be human. The programmes are narrated by Andrew Sachs[27], but it is the pictures that dominate. The series is a roller coaster ride of moving cameras, time lapse and slow motion, wide angle close-ups, tight

[27]Despite his prominent position in British sitcom mythology playing the waiter Manuel in the series *Faulty Towers*, Andrew Sachs voice-overs are distinct for their lack of character association which has enabled him to contribute narratives to a variety of documentary projects.

editing, punctuated by the occasional atmospheric shot as the sun burns through the top of the frame. Overlaid are a series of graphic effects that destabilise the images, transform our perceptions, render the invisible visible, and add drama, tension and hints of science fiction. Behind the scenes are a series of further innovations involving specially adapted lenses, electronic cameras, electronic switching, complex sets and habituated animals.

Tying these developments together into a series was the director and producer John Downer, aided by assistant producers Mark Jacobs and Nigel Marven, and a team of researchers and cameramen. Together they took a number of trends and techniques, which they developed into the style of *Supersense*. The technology John Downer used was not new, but had been pioneered in feature films and adverts and used in individual natural history films, but as something of an oddity. The contribution of John Downer was to take these elements and incorporate them into the series as a self conscious and visually dramatic style which owed as much to the conventions of the cinema, as to that of existing natural history films. *Supersense* brought these technical developments together in such a way as to make them into a new way of looking at nature, and a different way of inscribing nature in the networks of natural history films.

Firstly, *Supersense* involved new technologies which allowed the processes of inscription to move away from the naturalistic association of film cameras with scientific processes, and to use a new flexibility provided by video technology. Compared to the indexical quality of film, which results from a photochemical reaction, the electro-magnitisation of video can be endlessly manipulated and recycled. Whereas film can be constructed to stand in for the detached observer of science, the lack of historical association of video with science, and the ability to manipulate footage makes this more problematic. One result of the development of video was the ability to use new lenses for macro photography. So-called straight scopes and periscopes could be used to enable wide angle close-ups shots, which give intimacy to shots of small animals and insects, and allow both foreground and background to be held in focus. These lenses are very consumptive of light, and not suited to the high light demands of celluloid film, but were effective with video's sensitivity to lower contrast. These lenses construct a new relationship between foreground and background, observer and observed, as well as opening up new dramatic possibilities, whereby the viewer is encouraged to enter the world of unusual animals. Gareth explains how this works:

> "You have a lens which is effectively a wide-angle lens which is very, very close to the animal. That means everything's in focus. So you might be looking at a grasshopper but you can see there was a mountain in the background. [...] If you get a straight scope onto a chameleon then suddenly this chameleon towers above you. As it comes towards the lens, because it’s like a wide lens, it distorts a bit, and you feel like this chameleon is right on top of you and is going to eat you. It looks like a dragon. So it's also a visual trick, changing perspective. It makes small animals look big and impressive and in their habitat" (Gareth, interview 11.7.95).

Supersense's distinctive style also relied on the point of view shot, a camera angle that apes the view point of the animal, that can be inserted into sequences to heighten drama. It is an established part of film grammar that had been notably absent from the lecture format of natural history where the viewer is always in the position of observing the animals. The viewers looks through the eyes of animals at themselves. The purpose of this shot is a dramatic one:

> "Hitchcock uses point of view shots quite often. It's quite a common technique in cinema. You know, like where you are walking into a room and you are the person. It's a great thing for making people relate to the subject of the film. Making them more scared in Hitchcock because you feel you're there and you're getting into the shower and you're about to be knifed or whatever. [...] They're very powerful because you can make people, you know, empathise with a snake going along in the grass and this great big bird comes towering over it and grabs it. It's just a way of drawing people in and make them get into the world of the animals that you are filming" (Gareth, interview 11.7.95)

As well as altering the form of inscription away from naturalistic use of camera lenses and video technology, *Supersense* also involved new sites and processes of inscription, and revealed animals in previously unseen settings. This was either done literally, with the use of more realistic studio sets than those that had characterised the dry presentation of insects in *Life on Earth*, or by post-production techniques. Developments in post-production meant that it was now possible to take a piece of film or video footage to an editing suite and completely alter it, for example, reversing the shot left to right, adding graphics, or even a new background. Footage of animals could therefore be captured in the controlled environment of a studio or zoo, and this intervention subsequently erased through post-production. The technique of CSO or chromakey enabled film-makers to film an animal in front of a blue background to provide the foreground of the shot, and by electronic switching to fill in a suitable background.

Using these techniques we are able to fly with house martins over the white cliffs of Dover, or with peregrines over the Parthenon. Sometimes, the shots of birds flying were filmed using habituated animals. This technique uses the research of the early ethologists like Konrad Lorenz on imprinting. Birds are reared from hatching by one individual who they subsequently identify as a parent. The birds then follow that person, even flying after a jeep or microlight, which enables the cameraman to get the shots. Other times sequences were more crudely constructed in the studio, using the ultimate predictable animal - a dead one.

> "I mean, I think shots like the peregrine flying along or a bird of prey where you're seeing over it's shoulder as it flies past a temple in Athens. I think that was using that technique [CSO]. And, you just sort of, put a dead bird in a wind tunnel with a camera next to it so that the feathers are ruffled by the wind. Film it against blue. Superimpose it against the Parthenon and it looks like you've got a peregrine flying over the Parthenon. It's a very useful technique for that" (Gareth, interview 11.7.95).

This use of dead or imprinted animals to illustrate natural behaviour represents a dramatic shift away from naturalistic documentary filming techniques, where the emphasis is upon researching locations and using the filming resources to begin in the right place at the right time

to witness animals in the wild. Realism, involves a more active process of inscription, a different status for the research before filming which involves scripting and storyboarding action in accordance with the objectives of the film. Ben identifies that:

> "There was this kind of awesome shift from the sort of gentlemen, as I imagine, the sort of gentleman film-makers of the John Sparks era, where the idea was that you went out and set up the tripod and you waited. And it was all very civilised and you had your lunch breaks and so on. And, then eventually you would get the shot, and the money was put into paying people's time to wait around for it to happen. John Downer one which was hands on, lets make it happen. It was a very much more pro-active style of film-making" (Ben, interview 14.7.95).

These developments meant that film-makers were able to make animal behaviour more controllable and to gain more dramatic images. The different emphasis upon the process of inscription in the networks of natural history film-making mean that a new and powerful role emerges for the directing[28] skills of wildlife film-makers, rather than their naturalist abilities. One example of the difference in filming methods between producers and directors was given to me during a conversation with Gareth as follows:

> "I tend to see producers as being people who facilitate cameramen to go out and film things. So they say, you know, go off and film prairie dogs for six months and come back and we will make a film out of it. Which I think is a traditional way of doing it. But it's not a very good way of doing it. [The director] would say - I want this sequence, with prairie dogs but I want the prairie dog to come in here, and I want the coyote coming in here. I want there to be a fight and the prairie dog to be killed by the coyote and eaten. He already decides he wants that because it's an exciting little sequence that makes an important point about their biology. So he will then look at problems. Having scripted it and work out what he wants, he works out how to film it. And if you need to get a stuffed prairie dog to make that sequence work, or a tame coyote, then he'll do it. So there's a whole new way of doing it, you know. You actually make it work yourself, through cunning, tricks and techniques, according to the script. Which makes for more exciting films. And in a way, you're filming closer to what really happens. People say it's cheating but I think it's closer to what really happens because these things happen you know. Coyotes eat prairie dogs" (Gareth, interview 11.7.95).

These directors introduced a new approach to constructing and storyboarding sequences in natural history film-making, which owed more to film-making processes rather than science. Sequences could be conceived fully before filming, with the exact shots required, links and edits considered. As Gareth suggests, the criteria is first that it is an 'exciting sequence', second the 'point about their biology'. Directors as never before were collaborating with the cameraman and editors in decisions over camera position, lens choice, shot selection, frame composition and image system. The result was sequences which flowed more quickly, and dramatically, altering pace to build tension, and using the visual elements of the scene to move from one shot to another, as opposed to relying upon the verbal text to move the story forward.

[28]Somewhat confusingly the staff position director does not exist in the Natural History Unit. Sequences are directed by Producers or Assistant Producers in conjunction with cameramen. When people refer to directors in interviews, they are therefore referring to a process rather than one person in a designated role.

The change in documentary objectives meant it was no longer important to have 'real' animals, and imprinted, nudged or dead animals can be used to recreate the wildlife. The continued reliance upon a body of scientific knowledge and the realist codes of documentary meant that in fact stuffed animals could be used to construct sequences which are nearer to the 'truth'.

John Downer's strength was his understanding of how film worked visually, the ability and creativity to apply this to natural history films, and the organisation, ingenuity and determination to demand the shots that would fulfil his visions from his production team. He was a 'strong' director, of a sort that had not previously been encountered in natural history film-making, and who picked up a demand by the audience to be amazed at pictures of natural history on television. *Supersense* heightened the visual and dramatic power of natural history films and moved them further towards entertainment, where cinematic considerations are used to assess what makes a good sequence, dramatic story lines, and stunning visuals. The use of tame or habituated animals, more sets and more baiting, meant that natural history film-makers could make animal behaviour more predictable and stable within the networks of natural history film-making. However, as the position of animals within the networks of natural history film-making shifted further towards entertainment, and further away from science, tensions emerged over the ethical treatment of animals. Welfare guidelines for animals in entertainment are different to those that legislate for science, and things done to animals that would be ethically acceptable within science, become unacceptable when they are used for entertainment. As Ben suggests these tensions emerged within the industry:

> "In many ways it went against the philosophy of a lot of people, well myself included, in relation to the welfare of the subjects that you are filming. You know, John and Disciples, notably Nigel Marven, actually have quite a kind of, I think, a biologists view of natural history film-making. In the sense that they, while they would never endanger a population, they are not adverse to putting at risk a few individual animals for the sake of a sequence. And it's all justified for the greater good. The greater good of what it is doing for people's awareness of natural history as a whole, which is supposed to spin off conservation values, and obviously for their own success as producers and their own career. And I feel that we have swept under the carpet a lot of the ethical considerations in that style of filming, which say people like John Sparks, in his traditional approach, wouldn't accept. John [Sparks] would never commission a show where he knew that something would be done to compromise the welfare of the filmed subjects. John Downer would. That's the difference" (Ben, interview 14.7.95).

6.3. Science, Entertainment and Animals Ethics

Supersense created a new set of hybrids of natural history film-making. In this period the media and science became intertwined in many ways not reflected in their representations, but underlying the practices and places of both science and the media. Despite the shift towards entertainment in natural history films, natural history film-making still required large investments from science. Firstly, science remained central to the way that the BBC defined itself; the role that natural history films played in relation to the BBC charter, and the notion of adding value through education that supported the license fee system. The position of natural

history films as a global subject and thus global product, was upheld by wildlife film's reputation as an entertaining, yet safe subject. All these depended on the relationship of the Natural History Unit to a science that is constructed as objective and neutral.

The contribution of scientists to the practices of film-making also remained central to the production processes of the Natural History Unit. Scientific facts were used to underpin the integrity of what the BBC produced, though the narratives of the films no longer directly reflected this. Although a commitment to field skills and live broadcasting had been replaced by a commitment to images, as the films moved further towards more visual film-making, more directed camerawork, more drama and new stories, science actually became *increasingly* important to the integrity of the images that they produced. Scientific research was fundamental to upholding the commitment to realistic forms of representation, which supplied its educational and objective foundation, and to its immunity from the ethical considerations that have become important in using animals in the entertainment industry.

For the Unit, something called science represented a stabilised body of research upon which they could draw in order to construct their films and reconstruct animal behaviour. Anthony explains that:

> "The drama should always be based in science. What's happening on the screen should always be based on science, it should always be based on "a" what happens in the wild, and "b" what people would do anyway. I mean you could spend two years sitting waiting to see that in the wild, and it would happen, it does it happens everyday. Or you could have a set where you have got a small lizard, and a baby rattlesnake and it might take a day to happen and to film it. And you have got the 'wildlife' in inverted commas" (Anthony, interview 3.8.95).

As well as underpinning the integrity of animal images, the scientists became part of the practices of representation through which they made wildlife for the film-maker. In an intensification of the role of scientists which supported the production of *Life on Earth*, scientists not only took wildlife film-makers to animals, but increasingly made the action happen on the basis of the results of field research. With the stricter budgets and costing of films, there was an ever greater need for reliability in terms of locations of animals and timing of certain behaviours. Film-makers could no longer afford to spend money waiting for things to happen, and increasingly the scientists were the ones who are making nature for film-makers. The results increased the dramatic appeal of natural history films, and made the animals even more predictable. One current producer at the Natural History Unit, who previously worked as a scientific advisor talks about how, as a scientist, he was incorporated into these filming practices.

> "[They] hired me as a scientific advisor. So I had six weeks out in Malaysia, as a type, really as a glorified field assistant. So you know I knew the locations of the sort of behaviour that we could get, and I was the wrangler and the person who made the wildlife action happen when it was done in sets" (Ben, interview 14.7.95)

The NHU was supported by a network of research stations across the globe, not only generating stories but increasing generating the behaviour itself. Despite the diverging representations of scientific research in the scientific community and animal behaviour in the media, the networks of scientists and film-makers were increasing intertwined, through practices and through the development of filming and research technology. However, as filming practices moved through boundaries of what were seen as the separate arenas of science, film-making and broadcasting, which have different black-boxed constructions of animals, tensions arose between representations and the representational practice; between the scientific basis of natural history films and their entertainment imperative.

There have been legal considerations regarding the filming and televising of animals on Statute since 1911, when they were laid down in basic legislation against wanton cruelty. These were part of a series of legislative acts against cruelty to animals that dominated the efforts of early conservationists (Lowe, 1983). Later acts were specifically directed towards the use of animals in entertainment. The 1925 Act on performing animals, reinforced basic cruelty legalisation with the need to hold a local authority license to exhibit or train any performing animal. The Cinematograph Films (Animals) Act of 1937 directed that "no cinematograph film may be shown to the public which was organised or directed in such a way as to involve the cruel infliction of pain or terror on any animals, or the cruel goading of the animal to fury" (Shelley Bradley, report on the Legal Consideration Regarding the Filming and Televising of Animals, Natural History Unit Library).

This early legislation had been concerned primarily with fiction films like *The Charge of the Light Brigade*, whose filming resulted in the death or injury of large numbers of horses. They did not intend to legislate against the use of film within laboratory or field studies of animals. Animal welfare legislation has persistently sought to preserve animals against, what Matless identifies in the nature-cultures of the Norfolk Broads, as 'vulgar' or hedonistic' forms of animal consumption, whilst simultaneously endorsing a 'visceral' culture of nature which includes wildfowling, and preserves private rights to hunting and shooting (Matless, 1994). The negotiations over ethical issues in natural history film-making emerged from the hybrid position of natural history film-making between the vulgarity of entertainment and the objectivity of science. As the profile of natural history programmes within television grew, so did the potential for these issues to destabilise the networks of natural history in the press. However, for the moment these debates remained within the industry.

> "As this role of wildlife programs grows - along with their share of the TV documentary market the subtle job of disentangling fact from artifice, truth from falsehood and all the intervening shades of grey, becomes more than a matter of academic interest. While the ethical and professional responsibilities of news programmes are discussed almost as much as the news these days, wildlife shows have somehow been exempt from this scrutiny" (Discover, 1985: 93-94).

The ethical debates were re-opened in the industry in the 1980s through a series of discussions at wildlife film-makers symposiums, notably through presentations made by Jeffrey Boswall. A producer of wildlife films at the BBC in the 1960s and 1970s, Boswall has persevered to keep ethical discussions around natural history film-making on the agenda through repeated presentations, to established members and new generations at wildlife film-makers conferences. The first wildlife film-making ethics paper of which I have a record of was one presented by Dr. Charles Jonkel from the Department of Forestry, University of Montana, presented at a symposium at Bath in 1981. Some of the points in this paper are summarised and elaborated into two rules by Jeffrey Boswall. These have become well known throughout the NHU and were quoted, often without knowledge of their derivation, when individuals were discussing ethical issues with me. Jeffrey Boswall, reduced the ethical issue in natural history film-making to two main commandments: "Thou shalt not deceive the audience", and "thou shalt not be cruel to the animals" (paper delivered at Wildscreen 1994, and previous years).

These can be expanded further. Boswall suggested that the first commandment should mean you never show people what they cannot see in nature, though he freely acknowledged that this is easier to coin than apply (Discover, 1985: 96). For example, he suggested that sound remained a problem. When filming with long lenses, natural sounds could not be recorded at a distance, and was it more misleading to show the film without sound, or to recreate an approximation of the appropriate sounds in the studio? Boswall's statements on not deceiving the audience focused instead around the use of devices like slow-motion in film. He is famously and almost idiosyncratically, against altering the speed of natural history footage. These pronouncements on the white lies of natural history film-making did not aim to prevent shots being taken in sets, but they did aim to preserve the commitment to forms of inscription allied to scientific objectivity, and experiences that given the appropriate skills could still be had by individuals in the field.

This commandment was articulated in the early 1980s and was still being repeated in the 1990s. It provided an easy maxim to support many forms of film-making. There was no discussion about where it left a series like *Supersense* whose stated aim was to try to recreate the perspective on the world from the animal's point of view, something that the audience could never see in nature. There was also no discussion upon the representation of environmental issues in films, and the problems of *not* showing the audience something they *would* see in nature. In order to obey the command "thou shalt not deceive the audience" it was sufficient only to support a particular shot with a scientific reference.

The second commandment was no less problematic, but equally it supported a range of film-making approaches. There were questions over what constituted cruelty, and what species could experience cruel behaviour. In the 1970s, Parsons put forward the well rehearsed

argument that only human are cruel suggesting that: "we can with a clear conscience witness and film natural history incidents that cause suffering to animals. Cruelty can only justly be attributed to the actions of human beings, for they only are really conscious of the suffering they cause" (Parsons, 1971: 20). However, his choice of words are interesting, for as natural history film-making moved from witnessing scenes of animal behaviour to making them happen, the issue of what constitutes cruelty is complicated.

The NHU had already changed its view upon the stresses of filming animals in the studio. The experiences of an animal within the artificial environment of the studio was seen as more stressful than setting up scenes of natural behaviour, even it these involved predation. As Anthony suggests:

> "Often actually the simplest of things are actually far more stressful, than [things] like a killing sequence. It sounds silly as one of them is going to get killed, [but it] would be less stressful to both animals. We used to bring animals into the studio to do the *Really Wild Show*, even though they are habituated, suddenly they come onto a TV set, with loads and loads of lights, loads of kids screaming, that's a massive pressure actually. Sometimes things that aren't perceived to be a problem are" (Anthony, interview 3.8.95).

Boswall suggested that judgements over what is cruelty are a mixture of scientific fact, who would 'naturally' eat whom, and also one of personal morality, over where individuals choose to draw the line between species:

> "When I lecture about this issue, I ask this question: Who would shrink from introducing a living fly into a spider's web to get a shot of the spider feeding on the fly? Usually no one objects to that. Then I carry the same question through the animal kingdom, up to using a monkey as bait for a boa constrictor. Not many people like that too much. Then I ask - supposing of course that adequate provisions were made for his family - how would we feel about feeding an African to a crocodile? Crocodiles do feed on Africans, you know, so it would be *scientifically* correct" (quoted in Discover, 1985: 96, original emphasis).

Apparently there are never takers for this project. From these discussions Boswall concluded that ethics, unlike science, is subjective, and that individuals have to choose how to interpret their own morality. The ethical responsibilities of natural history film-making were therefore concentrated into the Unit's reliance upon scientific 'fact', and dispersed to questions of personal morality. The Natural History Unit was only in the process of putting together some guidelines on the ethical filming of animals in 1995, a staggering 40 years after the start of natural history filming.

In 1995 the ideals of personal integrity and choice remain guiding principles to ethical issues in relation to filming animals. This emphasis upon personal choice may have been more applicable in the past, but many people to whom I spoke, felt that public discussions about ethical issues were inadequate. These people often felt isolated by the dispersal of responsibility, feeling their private concerns may go against the perceived consensus, and

feeling pressured to follow received successes. "It's almost a bit of a taboo subject really. I haven't really had that many open discussions, because a lot of people who direct in that sort of way, direct really good films, because they are very strong directors" (Nic, interview 14.7.95). These personal conversations revealed that choices were becoming constrained, and more people were feeling pressured into positions about which they felt morally ambiguous or uncomfortable. Some people to whom I spoke felt that they could no longer maintain their personal ethical stance in the increasingly competitive media and commercial environment, although others could[29]. The lack of a centralised position on ethical issues at the NHU results from this ability to dispel responsibility through the networks.

These tensions over the position of the animals within the hybrid networks of natural history film-making looked set to intensify as the separate strands of entertainment and science diverged and further specialised. Many feature films using animals in the 1990s do not in fact use real animals at all because of the ethical problems this entails. The children's film of the adventures of a boy and an orca in *Free Willy*, was a great success and was predictably followed by *Free Willy 2*. Perhaps less predictably this second film used animatronics rather than real animals following adverse press reaction about the exploitation of animals for entertainment. The first film had featured a whale in captivity in Mexico City called Keiko.

> "Public outcry over Keiko's condition was so overwhelming that the sequel, Free Willy 2, was careful not to use any new footage of whales in captivity, instead weaving dramatic nature footage of free swimming orcas with set shots of animatronic whales developed by electronics expert Walt Conti" (The Guardian Guide 29.7.95: 4).

Biology and zoology are also beginning to discuss the ethics of research which manipulates animals or their habitats, in ways that include the capture and marking with radio transmitters or tags of wild animals which are then released for observation, and the keeping of animals for research. Research into inter-group dynamics and animal social behaviour has revealed the significance of the influence of human and animal encounters upon subtle interactions of animal behaviour. The line drawn by Jeffrey Boswall, "Thou shalt not harm the animal", becomes more complex as this research raises new issues over what constitutes harm. It is a new debate that is beginning to attract research which questions some of even traditional practices of wildlife film-making. The BBC Wildlife magazine reported research carried out by Marc Bekoff of the University of Colorado. He found that

[29] Anthony gave me an example of such a situation: "The big problem is, you know, where does the pressure of filming, push you, so how much beyond, where you stand by your personal ethics. There has been one programme that I have worked on [not necessarily a NHU production] where I refused to do a couple of sequences, because I don't, I don't believe in this. I think they did do them, I think they adapted it enough so they took it back from the realms of horror, which for my money is where it was, okay. But I don't think they ever had to involve an animal at all, I think they could have actually done the sequence with a model, and just lit it. I mean it was done as a night time movie sequence, so there's no problem with lighting. And then you do cut away close ups from a real animal, which would involve no stress at all. Well hardly any, film-making always involves stress, but hardly any" (Anthony, interview 3.8.95).

> "even minor intrusions can influence animals in important ways. A passive human observer may make animals more wary than they would be otherwise be and so alter their behaviour, even if the observer is a familiar figure. Bekoff found that shiny cameras were a source of disturbance to coyotes" (BBC Wildlife Magazine, January, 1996: 67)[30].

The hybrid forms of natural history which emerged with *Supersense* are caught between entertainment with its relentless innovation of spectacle, and the importance of science to its integrity and practices. Entertainment has increasingly to respond to legislation and public pressure to avoid cruelty. Science is further questioning whether it is possible to look without touching, and raising new question over how do you resolve the issue that the more you look, the more you find that you are touching? The credibility of natural history film-making on this uneasy ground depends on maintaining all its associations equally, and particularly in retaining the trust of its audiences.

6.4. Conclusions: Building Momentum and Maintaining Authority

Supersense opened up a new way of looking at nature for the Natural History Unit that stressed the power of the visual, the drama of sequences and the visual spectacular of special effects on the screen. It produced footage that could be used for sequence sales, and used for advertisements. It pioneered an approach to wildlife film-making that could be lucratively extended to feature films and music videos. John Downer achieved the ultimate accolade for a parochial media practitioner, receiving the call from Hollywood and entering the world of movies. Through the ability of the film director to control the visual drama of wildlife footage on the screen, John Downer and *Supersense* meant a new round of technological innovation and visual quality could rejuvenate the networks of natural history film-making. This introduced a further shift in film-making skills within the Unit, and introduced a new set of people to wildlife film-making whose interest was as much about television as natural history, and who were keen to innovate with the medium:

> "I think that it has brought in people, it has attracted people who are interested in film-making as much as or more than natural history. So you have got a different type of people who are maybe, who are keener to move on and do different things" (Oliver, interview 13.7.95)

It was suggested to me that there was no one in the Unit who had not been influenced by *Supersense*. In a genre where the established currency was visual impact, it was difficult to continue to produce programmes which did not take account of the changes in technology. The skills and working practices of the cameramen had shifted with *Supersense*; as John Sparks suggests: "there are cameramen who are so used to working with, sort of, nudged animals that send them out to the field and they are absolutely useless because, you know, things run away

[30]Other research debated at Wildscreen 1994 suggested that behavioural modification like imprinting and habituating birds from birth had implications for their breeding success; and there were reports that the ever present wildlife film-makers in the Serengeti had changed the hunting behaviour of lions, who were now hunting at night rather than during the day.

from you" (John Sparks, interview 13.6.95). *Supersense* introduced a raft of natural history programmes using point of view shot and in which time lapse and slow motion were routinely used with no sign posting. CSO or chromakey remained less common, in some ways it is a technique that has dated because of the impossibility of eradicating the faint blue haze around the foreground which indicates its use; evidence that technology can date films as well as provide a drive toward the future. In the place of electronic switching computer graphics are developing which are able to depict increasing organic and realistic biological forms. These techniques even merited their own name:

> "I hate using that phrase, the "*Supersense* techniques", but everybody always does it, you know they always say you know, you get producers or APs going "I'd like to that in the *Supersense* style and I think "oh god". What they mean is a low angle shot, with you know, playing around with the speed, with the sun burning through the top of the frame. But those styles have actually long since swept through the whole Unit" (Anthony, interview 3.8.95).

Traditional blue-chip natural history films were also to continue to play an important part of the output of the Natural History Unit over this period. In some ways the filming of these programmes had remained unchanged from the early days of natural history film-making. For example, filming a cheetah hunt on the Serengeti still requires you to follow these simple rules: "Find a likely spot, point your camera at it, and don't be in a hurry" (Discover, 1985: 94). The technological advances of *Supersense* were of relatively little importance to this form of filming. However, with the publicity which accompanied the transmission of *Supersense*, all the films from the Natural History Unit began to be open to scrutiny. As John Sparks suggests, this was partly the fault of the Unit themselves. The programmes which followed up on the success of major series by showing how it was made, no longer featured the patience of the naturalist/cameramen capturing wildlife footage, but rather focused upon the films made with maximum artifice.

> "Having someone sitting in a hide with a long lens does not make 'good' television. Therefore, all the 'making of' films, programmes are bound to focus in on the sequences and the shots, programmes which actually include maximum amount of artifice because it's more interesting. I think that risks debasing the currency, the odd person out there that I've spoken to, the odd person says to me - Oh that's all a fake isn't it" (John Sparks, interview 13.6.95).

The language that John Sparks uses is astute - 'debasing the currency' - for the value of natural history films are supported by their scientific associations and their assumed neutrality. By showing filming processes as well as films, which move further towards entertainment, the trust between the audience and the film-maker which supports the genre is threatened. Natural History Unit members frequently expressed surprise and resentment at the reception of their filming methods by audiences. As Gareth illustrates:

> "The public are always disappointed when they find out you do things like that, which I think's silly because they're not disappointed when they find out that feature films use stuntmen or special effects. And I think that people need to change their perspective of

> wildlife films. And you know view them in terms of what they are on the screen and not how they were made" (Gareth, interview 11.7.95).

What is missed out in this focus upon the relationship between images on the screen and the audience is the historical importance of science and scientific methods of inscription for the networks of natural history film-making. Science remained very important to the integrity of the films of the Natural History Unit, and scientists were still important in providing access to the sites and stories of animal behaviour, as in the past. However, as the public presentation of wildlife films moved away from scientific narratives and as the NHU moved further towards dramatic representations, then the way that the films are perceived in the press and by the public seemed likely to change. Some people in the Unit suggested this was a potential time bomb, and it is something which is addressed in Chapter 7. However, press attention over the period of the late 1980s focused more upon the failure of the Natural History Unit to represent environmental issues.

The new head of department who took over after *Supersense* was Andrew Neal (1989), having moved up through the Natural History Unit, working on *The Living Planet*, editing *Nature*, and series editor of *The Natural World*. Andrew Neal oversaw the development of a commercial arm of the Natural History Unit, that was to raise extra funding through the exploitation of natural history footage. Wildvision was established in 1991 as a joint venture between the Unit and BBC Enterprises, with a new computer classification system of all the existing footage in the Unit, and 15 new staff positions. The Unit library now consisted of 15 million feet of film, 5000 sound recordings, and offered huge potential for new multi-media forms. The money from the sales of this material would be invested back into technological development and maintaining the library (*The Times*, 11.9.91). Andrew Neal had high hopes for this material: "we know we're sitting on a gold mine of footage. We filmed creatures years ago that are now extinct in habitats that have changed significantly. We will soon be able to make programmes showing the effects of environmental damage" (Andrew Neal, quoted in *The Times*, 11.9.91).

The Unit had been under increasing criticism within the press for the images of wilderness it presented, as public discussions of nature began to be couched in environmental discourses of global crisis and extinction. The issues picked up by the press in this period were, thus, not ethical but environmental issues:

> "Paradoxically, wildlife on TV may be piling up new problems for the conservationist lobby rather than helping it. After all if we see countless host of creatures, crammed into one Technicolor half hour through the unseen wonders of TV technology and editing, then they can't be that endangered can they?" (Listener, 3.11.83).

However, as well as changing the relationship between science, entertainment, ethics and audiences, this period also marked the failure of the Natural History Unit to innovate with environmental programming. After eight years within the Natural History Unit, the series

Nature was transferred to television features, having never achieved audience figures or critical acclaim. Andrew Neal suggested:

> "That was perceived as a vote of no confidence in the Unit. It was a devastating blow. People in the Unit believe passionately that they should be making environmental programmes because they're out there everyday seeing what's happening to the wildlife and to the planet" (quoted in Venue, 23.10.92).

However, his point of view was countered by the new head of BBC South, John Shearer:

> "That is complete nonsense. *Nature* always floated between the two departments. Basically it's a political programme - any environmental issue is a political issue really. And there isn't really the political expertise in the Natural History Unit to do that. This was not a vote of no confidence. Television programming isn't about territory; it's about talent. I wanted someone to be creative with *Nature* and I thought the Features department was the right place for it at this time" (quoted in Venue, 23.10.92).

The experience and expertise developed by the Natural History Unit had been unable to capitalise on the opportunities presented by environmental programme making. The Natural History Unit's position had been attained with a reputation for blue-chip natural history films, revealing the beauty of nature, combined with an authoritative uncontroversial commentary by David Attenborough, underlain by a consensual style. Green programming was a different challenge where scientific authority was replaced by political contestation, and the presentations demanded commitment rather than detachment. The NHU was not able to deliver programmes that dealt creatively with these challenges to provide a programme that provided adequate rating and co-production interest for the increasingly competitive media environment. Moreover, environmental programmes could not offer the spectacular visual appeal of programmes like *Supersense*, nor the possibility of taking forward the essential visual drive of natural history film-making.

> "The problem is that people like Downer raised the stakes. There is no going back. Once that kind of quality of image has been put on screen, the public expect it in the next show. So in the end, if you are putting up an idea to the controller, you sell it on the grounds that you are going to see absolutely gob smacking images of the sort that you have never seen before. And the public are going to mad over it. Right. And otherwise if you don't sell it in that way, you don't get your money, you don't make your programme, you don't stay in business" (Ben, interview 14.7.95).

VII
The Birtean Revolution and the New Television Age

> "I am particularly delighted with *Watch Out*, because I think that that is a really fresh, original different type of wildlife programme and in fact, it is a very different type of television programme. It's the first ever interactive television programme and I think it's exciting from that point of view".
>
> (Alastair Fothergill, interview 16.6.95)

7.1. Introduction: Extending Choice and Centralising Control

In the early 1990s the BBC has undergone a series of high profile changes in structure, management and ethos. The beginning of the 1990s prove to be a problematic period for the Natural History Unit. The political pressure on the BBC have intensified in the ten years up to its Charter renewal in 1996, and government drives to increase accountability, efficiency and competition at the BBC means that managing enterprise and performance emerge as key skills within the networks of natural history film-making. The period also sees dramatic shifts in the international media industries as production companies, distribution means and audiences fragment and competition continues. The response of the BBC to these pressures is 'Birtism'. The very public rise of John Birt to the position of Director General at the BBC in 1993, following the resignation of the two previous Director Generals, Michael Checkland (1987-1992) and Alasdair Milne (1982-1987), took place in the midst of controversy and chaos in the upper echelons of the BBC (Horrie and Clarke, 1994). The effect of John Birt as Director General has been felt throughout the BBC, as he centralised control, reordered management and promoted efficiency. The Natural History Unit, which had previously developed fairly remote from BBC executives in London, suddenly finds itself firmly, but uneasily, incorporated into the BBC's new broadcasting structures. This rise in centralised concern and control from London, has important ramifications for the networks of the NHU.

The Natural History Unit also suffers particular problems from its previously secure position within global networks of wildlife film-making. The period sees a rise in producers of natural history films, especially within places where the NHU has traditionally exported films, which result in reductions of overseas income and increased competition for the skilled cameramen on which the Unit depends. The proliferation of media formats and distribution methods means more competition for slots and for scarce audience attention, and intensified competition for the control of copyright. This competition is now felt at every level within the Unit. A new role therefore emerges for a manager who can attempt to control the flow of ideas through the unit, the flow of material through copyright and impact of the films in the flows of television. The business of television, increasing becomes a matter of controlling the 'economies of signs and space' (Lash and Urry, 1994), providing potentially large rewards, but involving greater risks. There is a move towards more drama led natural history programmes, which opens up previously static formats to wider audiences, but does run the risk of relying on a proliferation

of dramatic values, like sex and violence, in order to evolve. The drive to make an impact in the schedule requires incorporating larger audiences, not only attracted through television, but also through catching the attention of press reviewers. These new strategies attempt to maximise efficiency, impact and audiences. However, they also risk threatening the complex legitimacy of the natural history documentary form.

Some of the challenges facing the BBC are also reflected in changes in academic work looking at the working of organisations. Organisations are seen as temporary and always dynamic, functioning through the fixing of transient flows of capital, people and commodities through global networks (Thrift and Olds, 1996: 319). This changes the focus of analyses of broadcasting from the ideological struggles over public service broadcasting that characterised the 1970s, to examining the conflicts over the material processes of the mass media within the international economic system (Elliott, 1986; Lash and Urry, 1994; Thompson, 1995). Indeed, this work suggests that these changes mark the death of broadcasting. The final collapse of the public service duopoly that existed between ITV and the BBC occurs when ITV franchises are awarded to the highest bidder with 'quality programming' a secondary consideration (Hood, 1994: vi).

> "'Broadcasting', defined as the devotion of institutional resources primarily to the making of programmes inspired by some sense of social responsibility, has been replaced by 'television' in which the priority is the accumulation of financial power in order to play a part in a 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 increased airtime" (Hood, 1994: vi; see also Murdock, 1994).

Television, traditionally so unlike any other economic sector that it has come under the Home Office (Lash and Urry, 1994: 118), is now under scrutiny from the Department of Trade and Industry, which sees it as an industry able to contribute to reducing Britain's overseas trade deficit (Hood, 1994: vi). The focus has shifted from broadcasting as a national forum, to television industry operating on an international stage. There has been a huge increase in independent television production companies in Britain which service domestic commercial and license fee channels, as well as global terrestrial, cable and satellite channels. British television companies have steadily increased their representation within overseas schedules through co-production arrangements, post production sales and commissions. In return, more overseas productions are now represented on British television. The cost of establishing broadcast channels has fallen dramatically, and look set to fall further with the advent of digital television.

These changes have impacted upon the workers in the television industry and they find themselves under severe pressure (Hood, 1994). Trade union rights have been eroded, wages are depressed, and the industry has been atomised into small production companies and units, increasing economic flexibility, but resulting in the loss of resources, skills, training. Concern

over the political independence of the BBC has shifted to a concern over the ability of individual producers to act creatively and independently at the level of programme making (Hood, 1994). These changes mean that television has shifted from its historical position of being driven by supply, to a position where audiences attention has become the scarce commodity. What is now being traded on a global scale are not programmes, so much as audiences shares and advertising revenues.

The BBC has been particularly impacted by these changes. The claim of the BBC to acts as a forum for the nation, with an audience share that routinely reaches 50%, has been the centre of its mandate to charge a universal lice fee. In a period when its audience share is predicted to fall to 30% as television choices increase, the legitimacy of public service broadcasting itself is threatened: "the room for errors by the BBC management seems very small indeed and the survival of public service broadcasting as an object of public policy is itself in question" (Schlesinger, 1990: xxxiv). As a response, the way that the BBC defines itself has changed dramatically in the last ten years, with metaphors drawn form the service industries rather than cultural concerns, as Michael Checkland suggests:

> "We must be seen less as an elderly institution and certainly never as a senile bureaucracy, but more as a modern £1, 000 million company, adapting to competition and change as many other organisations and companies have had to do in this country, and doing it with enthusiasm and not with regret for the passing of our imperial role" (quoted in Schlesinger, 1992; xv).

The strategies to address these challenges are outlined in the document *Extending Choice* (1993). This document has received extensive media coverage and comment, but its main theme can be summarised in the statement: "The fact is that we make the best programmes in the world, but we fall short in the way we manage ourselves" (This is the BBC, 1993). The BBC wishes to continue license fee funding through its commitment to providing programmes of interest to a wide audience, and to extend viewer choice. However, in view of the projected falls in audience the BBC has to commit itself to adding value, through overseas sales and efficiency cuts. *Extending Choice* suggests that the BBC would continue to seek other means of supporting programme-making through the sale of materials for secondary broadcast on cable, satellite and video, and through increased co-production; and pursuing more programme making at a lower cost. BBC Enterprises was reorganised into BBC Worldwide, and in a press article, Bob Phillis, the Chairman of BBC Worldwide set a target of tripling overseas programme sales by the end of the decade (Guardian, 30.12.94).

Extending Choice also focuses upon the internal structure of the BBC. The BBC had previously been unable to provide accurate costing of each individual programme (unlike independent programme makers) due to their use of in-house support, including studios, outside broadcast units, travel organisers, editing facilities, graphics expertise, stationers and reference libraries. The 1990 Broadcasting Act which stipulated the BBC and ITV had to outsource 25%

of their programme production to independents had brought them into direct competition with the BBC (Lash and Urry, 1994). The pressure to increase the accountability of BBC programme-makers resulted in the creation of an internal market for resources with Producer Choice, to be implemented in April 1993.

Producer Choice creates a market place for resources previously in-house, and put pressure on programme makers to demand the best possible value for money from resource providers, whether they were in-house or external. Internal departments are expected to organise themselves more effectively to compete with outside suppliers. Accompanying this comes new finance and computer systems designed to manage and monitor this market, that can be used to calculate the precise cost of each production. Accountability is monitored through Performance Reviews. This is an annual exercise to measure the performance of programmes, departments and managers against agreed, published, indicators. These new measures of agreed good management are effective with a smaller BBC corporate core. These changes necessarily save money, by reducing in-house overheads and by the loss of jobs. It was estimated that in the 18 months following its implementation in April 1993 there would be a loss of 1, 250 jobs (Venue, 23.10.92). Reorganisation of the upper management of the BBC separated the output directorates, controllers and programme departments, thus putting independent producers and in-house production departments on an equal footing in their dealings with channel controllers (*Extending Choice*, 1993). These changes were met with much public commentary and debate, amid reported anxiety and suspicion from staff of the BBC.

On first impressions, the Natural History Unit seems well placed to cope with these changes, and perhaps even thrive on them. In the *Extending Choice* document, the NHU appears to exemplify the new direction expected of BBC departments. It was a pioneer in the BBC, already accounting for over half of its income from co-production finance and secondary programme sales. It represents a regional specialism within BBC South, with a concentration of expertise in natural history film-making. This is recognised in its official designation as a Centre of Excellence for Wildlife Film-making in 1993. In addition to meeting the commercial and structural demands of the new BBC, it provides a continued commitment to public service broadcasting ideas through the provision of films that are recognised as of educational value. Wildlife films are the ideal commodity for the BBC in a new television age that requires income from programmes with international appeal and sales value, from a small concentration of resources, yet still retaining the name of the BBC as a public service broadcaster.

However, the developments and past success of the Natural History Unit have flourished at a distance from the scrutiny of London, and the high investments of time, people and money in natural history films begin to seem difficult to justify. Compared directly to other documentary strands at the BBC, the genre of blue-chip natural history films are too expensive. The quote in the *Daily Telegraph* attributed to a 'Unit stalwart', reflects the inability of the NHU to continue

developing outside of the control of accountants London, and the constraints imposed on other documentaries strands:

> "These days you have got accountants sitting in London who've never made a programme. They talk about programme models and staffing models - and what's the latest buzzword? - programme genre. All the programmes BBC makes are being fitted into a category and the great and good in London have put natural history into the documentary genre. They have found that what we call blue-chip natural history films seem to take an eternity in the field and seem to take a great effort and that the department is greatly over staffed for the number of programmes it produces" (Daily Telegraph, 23.9.92).

In fact this is a period of uncertainty for the Natural History Unit, as it attempts to adapt to these changes, and maintain its own networks. The head of the Unit, Andrew Neal who followed John Sparks, took on leadership of the department after the success of the series *Supersense*, and in the closing stages of the David Attenborough Trilogy *Trials of Life*. It was a critical time for the Unit, having apparently taken technological innovation as far as it could go in *Supersense* and *Lifesense*, and seeming to have reached the conclusion of the mega series with *Trials of Life*. The existing strands of *Wildlife on One*, and the *Natural World*, were worryingly reliant upon co-production money which hampered the Unit's ability to innovate with these formats.

The designation of the BBC in Bristol as a centre of excellence for natural history film-making, television features and regional broadcasting, also left many previously shared resources in an unstable position. The studio and the outside broadcast Unit previously based in Bristol were both closed down; graphics and post production were slimmed down. The move from designated in-house services to competing with external contractors was by no means smooth. The in-house resource departments were in the difficult position of having to prove themselves as competitive business units at a time when they had lost a high proportion of their expert base. Despite the continued commitment to natural history films, there was a feeling of erosion and the loss of control.

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> "[It] was a big shock for everybody, because, you know, people who had worked here for years, twenty years or more and they were given the sack, made redundant basically. Just the fact that, how many hundred, two hundred people or so, don't work here anymore obviously had an effect on the morale, because people you see around, departments that you knew that operated, no longer operate. So there was a feeling, that you know, what are we being run down for, are they going to close us down completely?" (Alex, interview 1.8.95)[31].

In a speech to the British Association for the Advancement of Science in 1992, which was followed up by a widely quoted interview in New York, the Head of the Natural History Unit,

[31]This feeling of erosion extended out from the BBC to the city of Bristol itself. The city, which had previously felt a pride in its BBC centre, felt aggrieved and alienated by the changes dictated from London. This was certainly the experience in the family with whom I stayed in Bristol. They had had friends working at the BBC, and had previously rented out rooms to BBC employees; they now only advertised at the University.

Andrew Neal asserted that "the BBC is being gravely eroded, the morale of its staff seriously damaged" (*Venue*, 23.10.92). He suggested that the changes accompanying producer choice, would result in a loss of control over creativity within the Unit. "I believe in Producer Choice, but what is happening is that everyone is being set new tariffs for programmes. This is the opposite to Producer Choice. It shows that the powers that be do not trust the producers" (Andrew Neal, quoted in *The Independent* 18.9.92). In his view, the use of production costings to set a tariff upon programmes meant that it was the accountants rather than the programme makers who were setting the editorial agenda for the Natural History Unit. The producer's job had been reduced to bureaucracy. "I was spending 50 to 60 hours a week on bureaucracy, related to the changes taking place. I'm a creative person, and I'd had enough [...] Creative people do not like being told what to do by accountants" (Andrew Neal, quoted in *The Independent*, 18.9.92). Shortly after this speech, Andrew Neal handed in his resignation.

Andrew Neal was not the only member of the department to leave during this period. The contraction of resources and opportunities for innovation at the Natural History Unit, along with ability of independent companies to produce programmes that could be shown on the BBC, meant that there was a surge of producers and other staff leaving to set up on their own. Almost the entire *Trials of Life* team left shortly after the series to form the company Green Umbrella which was set up in Bristol. Richard Matthews who had freelanced extensively as a cameraman for the BBC, set up as producer of Zebra films. Mike Andrews was a veteran of the NHU who had the joined the Unit from London in its early days as a producer on *World About Us*, and had gone on to work on such prestigious programmes as *Flight of the Condor*, *Horizon* and *The Birth of Europe*. He, however, left to set up Global Productions. On leaving, he criticised his job for being overly involved in financial dealings to support programme making for the BBC; dealings that brought no personal gain and involved no job security. Keenan Smart, who had been mooted as a potential candidate for the next Head of Unit, moved to National Geographic Television's newly created Natural History Unit in Washington D. C. where he has been working developing new technology for the presentation of wildlife film in natural history museums using huge IMAX screens and virtual reality.

Those people who remained within the Natural History Unit had to cope with these new pressures, as well as face some perennials ones. This period is not immune to the perceived problem of audience boredom, increasingly driving television forward and making the earlier innovations quickly obsolete. "Five years ago, the NHU produced *Supersense* and 'there is a shot in that film where you actually appear to be flying with ducks,' says Fothergill. 'The first time people saw it they were amazed, but now they would say: 'Oh, it's flying with ducks again.'" (Alastair Fothergill, quoted in *Broadcast* 15.7.94: 19). The Natural History Unit's American links now bring their products into an even more competitive environment where new channels and new choices for television entertainment meant a qualitatively different audience. The competition for attention further restricts the type of programmes for which the

NHU might obtain co-production in the States. John Sparks, when negotiating co-production arrangements in the States encounters the following account of the audience:

> "People will zap through their television screens and come across birds and they just go on zapping. Come across great white shark, lions they stop. That, that's their simple philosophy. Well what stops people zapping? You've got 80 channels. When you've got 80 channels, what stops people zapping? As soon as you've got 20, 30, 40, 50 channels, the behaviour of people watching television changes quite a lot. You become a zapper. And if your attention drops for a moment on what you're looking at, I wonder what's on elsewhere zip, zip, zip, zip" (John Sparks, interview 13.6.95).

The Natural History Unit, also faces renewed competition from *Survival*, who had success with a series of films on large, charismatic mammals, like tigers and elephants, combined with presentations by intentionally famous personalities, such as Bob Hoskins. *Survival* were expanding into children's programmes, joining with Henson productions to produce programmes combining wildlife with the muppets, which had an obvious appeal to both a European and American market. Partridge films, who had continued as before, to invest high amounts of money and time into meticulous blue-chip films found that changes to the market for these films, added to internal management problems, meant that they were no longer profitable and as a consequence went bankrupt. They survived only following a buy out by HTV. Natural History film-making companies were also beginning to see the benefits of the BBC's library resources, and to think about joining forces to challenge its position. Partridge later teamed up with TVNZ and Scandinature to increase the depth and breadth of their archive and to offer a video on demand service in the States (Michael Bright, interview 24.3.95).

The global restructuring of supply and demand for wildlife films, challenges the global position of the BBC, which had been established since *Life on Earth*. Companies in other countries who had previously been relied upon to support BBC productions, are turning from collaborators into competitors. The United States, Canada, New Zealand and Australia, and to a lesser extent India and Japan, are progressively looking to increase their domestic natural history film production and to export their programmes to a world market. Britain and the United States are no longer the only two centres of wildlife film-making.

> "One of the most significant developments in natural history programme production in the Eighties was the arrival of producers from the Southern hemisphere on the market. New Zealand's state broadcaster TVNZ has stepped up production of natural history programming by 300% in the past three years and has boosted its Natural History Unit from a staff of 3 to 50" (TV World, July/August, 1990: 12).

The NHU had previously been very successful in supplementing its income with co-production money. These changes in the world market for natural history films coinciding with changes to BBC funding, put a double strain on the NHU. As John Sparks testifies:

> "The world that we are in today is not so easy. Because the Americans are now making their own films. The Australians are making their own films and they don't want to put as

> much money into run-of-the-mill things like the *Natural World*, or not as much as they used to. So therefore we go back to the Controller and say - Look we've got a bit of trouble here, they will say tough, I mean we are sorry, but we don't have anymore to give you" (Sparks, interview 13.6.95).

In order to maintain their position, the Natural History Unit also want to able to invest in world rights for programmes, which would enable them recoup revenue where ever they were transmitted. This brings them into direct competition with other companies abroad:. "you want to be a global player, you have to buy rights in all the world. Discovery want to be broadcasting all around the world, like the BBC do frankly, and so they want to have all rights" (Alastair Fothergill, interview 16.6.95). These rights would now included broadcast rights, cable rights, video rights, and multi-media rights. The increased value of wildlife films as a commodity also brings competition for control over film copyright. Copyright, except for the early naturalist films, had traditionally remained with the BBC as commissioner of the material. Now cameramen, aware of the resale value of their material, are increasingly trying to negotiate different arrangements to retain this (Alan Baker, interview 19.10.95). Moreover, as revenue from filming licenses increases in National Parks across the world, countries like Bhutan are attempting to control filming by embargoing repeat footage, ensuring that all material of their indigenous wildlife has to be filmed in situ (Alan Baker, interview 19.10.95). Finally, the BBC's position as a producer broadcaster meant the NHU is unable to expand into satellite channels, or cable networks that were available in Europe, as it would then be competing against itself. The new channel commissioners had to look elsewhere for material.

> "For Laura Plumb, who is responsible for Discovery Europe acquisition, being unable to obtain UK product is frustrating. To get productions off the ground most producers need the involvement of a UK broadcaster, which would of course view Discovery Europe as a competing service. Most of the material acquired by Plumb comes from the US, Australia and Germany, and she is constantly looking elsewhere for suitable programming" (TV World, July/August, 1990: 13).

After nearly forty years of expansion, development and progression, it seemed that the Natural History Unit faced a reversal in fortunes. As the article reporting the departure of Andrew Neal suggested, the job for any new manager was to be a difficult one.

> "The industry as a whole is in recession because it is flooded with wildlife films and our co-producers in America are having difficulty raising funds. So it's a fairly bleak scenario. The crest of the wave broke with Andrew Neal. Now it's a question of either retrenching and operating on a smaller and much more efficient scale, or going downhill. I wouldn't envy the job of the new manager at all"(Venue, 23.10.92).

7.2. Managing Success

"A huge cheer went up at the BBC's world famous Natural History Unit last week when it was announced that 32 year old Alastair Fothergill had been appointed its new head" (Venue, 23.10.92). Three years later this optimism appears well founded. Alastair himself reports the

successes that he has had "We have got a five year plan, which I have done which shows the hours over the last five years and if you look at that it goes up and down and it varies between BBC1 and BBC2, but basically, since I got the job, it has gone up by 20 percent" (Alastair Fothergill, interview 16.6.95). Other people in the Unit detect a renewed sense of optimism and enthusiasm. "I mean I don't know Alastair at all, but the vibes, are just totally different and everybody knows that. A lot of young, you know, coming in" (Elizabeth, interview 5.7.95).

Alastair Fothergill was able to turn the new BBC ethos into a success for the Natural History Unit. He has maintained both the public service broadcasting stance of the BBC through the reintroduction of the landmark Attenborough mega and mini series, and the position of the NHU as a commercial operation through overseas income via co-productions and Wildvision commissions. The success of Wildvision for the Natural History Unit meant that it has been able to sever its links with BBC Worldwide and concentrate on cementing its relationship with the NHU, providing production experience for staff and investment in the upkeep of the Unit's archives. Alastair Fothergill has increased morale within the Unit, focused upon maintaining the place of the Natural History Unit's products within the television schedules, and innovated to develop the flow of skills and ideas within the Unit to create fresh ideas for the new television environment.

Alastair Fothergill had come up through the Unit, working on *The Really Wild Show*, *Trials of Life* and as producer on *Life in the Freezer*. He had a wide range of filming experience, but more than this was able to motivate and manage the Unit. The BBC restructuring offered new opportunities for managers, though those people who were able to thrive in this new environment were a particular type, not always looked up to by their predecessors. "Mr Neal said that the managers rising to powerful positions were appointees or followers of John Birt, the Director General designate, who believe in the need for radical change and a tough management style" (The Independent, 18.9.92). A change in management style has pervaded the Unit, represented by Alastair as Head with the responsibility of not only managing the internal resources of the Unit, but also the communication between the Unit and the rest of the BBC.

Internally, this new management style involves a recognition that the Unit is dependent upon the continual generation of new ideas. Previously programme ideas were seen as the preserve and property of established producers. A new management style involves the ideal of opening up communication about ideas, through e-mails, memos and other forums, to develop a continual flow of creativity in which new ideas, formats and styles could be pooled and new programme ideas derived. These changes have created opportunities for more people to contribute to shaping a television product. But they also mean that natural history film-making can no longer be seen as the last place where it is possible to be a naturalist with the freedom to travel and observe animal behaviour.

> "I think there was a time when people fancied going to make a film in Borneo, or whatever, and they had all the money and they just went and did it. And basically the end result was probably beautiful and people watched it. But it wasn't the kind of first and foremost reason for doing it. The first and foremost reason for doing it was because you wanted to go there. I think that this is less so now" (Ruth, interview 17.7.95).

The people who gain most from these management changes are not the film-makers, but the administrators. Before the introduction of Producer Choice:

> "There were five people, basically who did that [- ran the Unit]. And now, I mean, it must be getting on towards a dozen people. They have now got a deputy manager, management assistant, safety co-ordinator, another finance assistant. But it is necessary, because the amount of work for those departments. Those areas have increased as the BBC has changed during those years. Producer Choice was the biggest change, that necessitated increasing staff in those areas, because the amount of work and the amount of information that was required on a departmental level, just ballooned. Suddenly, you know, everything happened, they wanted to know this, they wanted to know that" (Alex, interview 1.8.95).

Producer choice has potentially opened up opportunities for people in the Unit, but it has also introduced bureaucracy. Everyone in the Unit is now incorporated into the networks of natural history film-making, but with this access comes surveillance and a possible lack of individual expression. Part of developing the 'community of shared ideas' has been to widen the experience of all the people within the Natural History Unit, through participation in training courses, and through placing people to ensure that they gain a maximum breadth of experience. Fothergill is keen to ensure that people in the Unit work on a variety of television programmes, apart from the relatively luxury of the budgets and production schedules of the blue-chip series. "Alastair is keen to put as many people through doing children's television, and the *Really Wild Show*, um, *Nature Dicks*[32], *Watch Out*, you know, all that style of live OBs[33] and so on, so that they have a broader experience of film-making" (Anthony, interview 3.8.95)[34]. The new internal environment of the Natural History Unit also offers new opportunities for producers who are keen to be innovative within the formats of *television*. Mike Beynon had worked on *The Really Wild Show* in the 1980s and found the new system offered a new freedom to innovate which was realised in the programme *Watch Out*. "[Producer Choice] gives power back to the programmes - for too many years, the BBC has been a group of self-perpetuating oligarchies. In the past, I have been forced to use a particular editor rather than use anybody I want. The whole thing has been hidebound by rule and regulations" (Mike Beynon, quoted in *The Daily Telegraph*, 23.9.92: 12).

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[32]The nickname for *Nature Detectives*.

[33]Outside Broadcasts.

[34]Ben suggests that can be against the initial wishes of people involved: "I came into the Unit, and I was interested in making films. And I didn't want to do *Watch Out*, because it wasn't the way I saw myself. I wanted to go into *Wildlife on One* and make films And Alastair basically kind of said, look it would be good for you, I want you to do it. And I thought, oh not, you know, not much leeway there. And as it is its happens its brilliant. I'm having a ball" (Ben, interview 14.7.95).

Alastair Fothergill has also been influential in reworking the relationship between the Natural History Unit and the controllers in London. From the pool of ideas that are generated within the Unit, he carefully selects the few that can be successfully sold to the controllers as being the right programme at the right time, made by the right people. Alastair Fothergill has worked upon the institutional identity of the Unit, changing the previously low morale and low expectations of the early 1990s into positive propositions to the controllers.

> "He now understands how to sell our proposals to the controllers, and I think there was a danger maybe that we had gone through a bit of a trough, and that we had kind of assumed that the controller didn't want natural history, that they wanted everything else but natural history. I think it's really the kind of way that it was kind of proposed. And then the ball started rolling again and things started to get accepted again. We kind of got a bit more confident and started drawing on these things. I mean it is difficult to know exactly what happened. I mean Alastair's management is much more open now, so you know the process much better. It was a bit kind of, it was a very quiet process, we didn't really know how things were commissioned" (Ruth, interview 17.7.95).

As Head of the Unit, Alastair Fothergill is responsible not only for the editorial decisions of what programmes are put forward to the controllers, but also for managing the public relations of the Unit. The two are increasingly related, in that the Natural History Unit, along with other BBC departments and independents are now competing to persuade the BBC that the NHU can provide what it wants. For the NHU, this combines the commercial dimensions of co-productions, high audience ratings as well as the educational aspect of the NHU's continuing relationship with science through programmes like *The Private Life of Plants*. The other aspect of creating a successful wildlife programme within the increasingly competitive media environment is to produce something that will make an impact in the schedules. For the Natural History Unit this has involved bringing back Attenborough as a key figure head in the mega series and rejuvenating the live outside broadcast. The key to making an impact in the schedules increasingly means producing something that the press will write about in the previews and reviews.

> "You know, even in our relatively limited commercial market when you have only got four channels and satellite, which is penetrating only about six or seven percent. Everybody wants events, everybody wants something that people will write about, and natural history can provide it. It can provide it in probably two ways. It can provide it through the mega series, the Attenborough blockbuster, you know which is very, very special and everybody writes about it. It also can provide it, I think through live events like *Flamingo watch*. *Flamingo watch* is a bit like a night on BBC2. It's something special it is something different it's out of the mill. It's out of the run of the mill. And that variety is valuable" (Alastair Fothergill, interview 16.6.95).

Alastair suggests that every conversation he has with the Controller of BBC 1 involves a pleading for an event, "whenever I talk to Alan Yentob he says: 'Event! Event! Event! Event!'" (Alastair Fothergill, NHU Meeting May 1995).

The combination of event, wide popular appeal and scientific standing still provide the defining qualities of a good wildlife film and the guiding mythology of the Unit. It has been important for the Unit to be seen to return with the enthusiasm and the money to do what it, perhaps, does best - blue-chip natural history making. The blue-chip natural history film, and particularly the big series, has again played a key role in the rejuvenation of the Natural History Unit. Following its absence after the *Trials of Life* (1990), along with the premature requiems of the genre, the blue-chip natural history series, fronted by David Attenborough, and featuring amazing technical developments, has made a triumphant and high profile return with the short series *Life in the Freezer* (1993), and the longer *Private Life of Plants* (1995). Both programmes proved that technology could still provide further impetus to the quality of blue-chip natural history photography with spectacular underwater footage in *Life in the Freezer*, and stunning computer-operated, moving, time-lapse shots in *Private Life of Plants*. A further series with David Attenborough on birds is now planned which will surely be a similar success. The series have also been followed by increased support for the strands *Wildlife on One*, and *The Natural World*. As Alastair himself summarises: "*Life in the Freezer* did very well, *Private Life of Plants* was an amazing success. *Wildlife on One* increased from 10 to 13 programmes because it was going well, *The Natural World* is the most watched factual programme on BBC2" (Alastair Fothergill, interview 16.6.95).

These high impact programmes have been important for the BBC, who are still looking for the Natural History Unit to provide an educational input as Alastair affirms: "We do programmes that the BBC is proud to make and the BBC can say 'hang on ITV go down market, but we do the *Private Life of Plants'*. And we do the things that the British public will say it's worth paying our license fee for" (Alastair Fothergill, interview 16.6.95). The series returned with a high media profile and with aggressively promoted books and home videos, which provide increasing support for these formats and pay for David Attenborough's continued involvement through his royalties. The blue-chip series and programmes have been amongst the strongest overseas sellers for the BBC. The top overseas earners for the BBC in 1994 included many wildlife films. *Life in the Freezer* sold to 28 countries, *Malice in Wonderland* to 27 countries, and *Orang Utans - out on a limb* to 24 countries (Guardian, 30.12.94).

The live event has also proved a high impact success for the Natural History Unit, providing the backbone of a whole day's transmission on BBC. Repeated broadcasts from a series of wildlife sites in the UK for *Bird in the Nest*, and abroad for *Flamingo Watch*, were an innovative and eye catching way of providing a high profile for short programmes, and at relatively low cost. The essence of *Supersense* was distilled into the series *Alien Empire* which featured all manner of insects; these unusual media stars being transformed by strong storylines and directing along with fantastic photography and graphics into a feature film style focus upon the insect world. The Unit had less success with the series *Natural Neighbours* and *Nomads of the Wind*, both of which mixed wildlife and animals together in new combinations, and suffered from a lack of

audience and critical attention. Nevertheless the output and the range of programmes from the Natural History Unit increased dramatically over the period 1992-5.

The new Head of Department has also been able to innovate by bringing back British programmes. The dominance of the co-production market in funding blue-chip wildlife film-making, and the concentration of Unit skills in this areas meant British wildlife had been under represented. The Unit has been able to combine cheap and original ways of presenting British wildlife to domestic audiences, along with the sympathetic environment created in London following the Programme Strategy Review in 1993 which criticised the lack of UK wildlife on television[35]. The Channel Controllers commissioned two new series that would feature only British wildlife, creating a space for UK animals on screen outside of the co-produced strands of *Wildlife on One*, and the *Natural World*, which could not normally attract money for foxes and badgers. *Nature Detectives*, and particularly *Watch Out* introduce the opportunity to experiment with a cheaper, and more popular style of programme than the traditional blue-chip format. Both are fast-paced magazine style programmes, featuring short and often witty sequences of British wildlife, without an authoritative narration, but with new presenters, and vox pops featuring members of the public. Programmes like *Watch Out* bring natural history film-making further towards contemporary television styles.

7.3. *Watch Out* and New Styles of Natural History Television

> "*Watch Out* which is what I am working on now. Again, it's a slightly, it's a jump forward, you know, it's something different, that hasn't been done before. It's a sort of mould breaking that happens every so often, that hasn't been done before, like, you know the *Supersense* things. *Watch Out* is a bit funkier, and gets the kind of humour back in" (Nic, interview 14.7.95).

One programme that took many of these elements and combined them into something new was *Watch Out*, transmitted over the summer of 1995. It was a marked departure from the scale and scope of the blue-chip natural history programme. The programme comprised only ten minutes, as opposed to thirteen 50 minutes slots of the mega series. The turn-around time from research to transmission was just two weeks, compared to the three years of the blue chip programme; and it was managed by a large team of young researchers and producers. *Watch Out* focused upon British wildlife, presented in a quirky, fast magazine programme that embodied the ethos of cheap, popular television programmes, filmed on video and making extensive use of library footage. It reflects a merging media environment in taking inspiration from the news and nature updates in the *BBC Wildlife Magazine*; it provides something fresh that people would

[35]"There was a virtual directive on that from the DG. About three years ago he said in his programme review, we should do more British. So, Alastair responded, so I think *Watch Out* and *Nature Detectives* are a direct response to that. And, it's very good that they have done it. Three or four years ago it was a joke, because you were doing *Wildlife on One*s and *Natural World*, and everybody says that we depend on co-production for that so, the Americans say we don't want your boring foxes, you know. But people over here, love seeing our foxes. So, there was that conflict" (Iain, interview 19.7.95).

write about in the press, and as the first interactive television programme it, in fact, wrote about itself through its linked web site. Interaction was further encouraged by including the fax numbers and e-mail addresses of the production team, telephone information lines, and the speeded-up summary of the information the ended each programme, designed to be videoed and replayed in freeze frame. The production schedule of *Watch Out* with the short time lags and the increased interactions ushers in a new relationship to the audience; it forces an audience awareness vastly different from the ratings and sales figures of the blue-chip films. Its stated aim is interactive, in a way that film-making is not. The level of interaction is difficult to gauge; the figures suggest that *Watch Out* had approximately 5000 internet 'hits' each week. The key difference is the enthusiasm of looking out to the audience interaction rather than looking inwards for inspiration, or overseas for sales income.

Watch Out was screened in a two ten minute slots each week. It was first transmitted late in the evening during the week on BBC2, and repeated following the end of children's' programmes on a Saturday lunch time. The ten minute slot is less fixed in the schedules than the half hour or fifty minutes which meant that it was subject to short notice changes in transmission time, but the programme ran for the whole summer of 1995. The programmes, sequences, ideas, features, and styles evolved over the summer period to reflect the development of the production team and seasonal changes. The evolution of the series and the variety involved means that the series is hard to characterise or describe, so I will unashamedly describe the one that has stuck in my mind the longest.

The programme concerned had been made to tie in with International Bog Day on the 30th of July 1995. From these rather inauspicious beginnings, the production team constructed a mini epic featuring the music, atmosphere and cult appeal of b-movie horror with self-referential, humorous nostalgia. After 40 years of pursuing veracity of picture colour and quality, the NHU opted to open the programme with the letter box format of the art film, boxing in old black and white footage of David Attenborough, with the legend 'Bog Things' sprawled across it. The programme continued in black and white, the youthful David Attenborough replaced by the equally youthful Simon King introducing us to a series of quirky, folklore facts about marsh plants and insects with 'in your face' camera angles, overlain by subtitles and dramatic music. The next title screen introduces us to the intermission. Here we flip to the on-going saga of the osprey nest featured through the series where the chicks are fledging. The colour footage is again boxed, this time with the characteristic lines, date and recording light of camcorder footage. Back to the main feature and now the heightened colour and soft focus of the fashion shoot overwhelming us with a sequence of fluorescent pink images and hints that finally unveil the mallow plant. Next a sequence that starts off with the surrealist juxtapositions and fast edits of the music video, but metamorphoses into Simon King telling us how to communicate with crickets with a comb and some grass: in a field near you soon. The programme ends as it begins. The events that are occurring all over the country on International Bog Day run over

black and white footage of David Attenborough running, wading and tripping through marsh in pursuit of an animal onto which he finally dives, his coat outstretched. Then follows the further information that can be decoded through the video; watching the credits you find the programme's producer was none other than Pete Marsh.

Watch Out heralded a new style of programming from the Natural History Unit that stresses the associations with television, as opposed to science, Reithian broadcasting or Hollywood film-making. As Ben suggests: "it's not so much about natural history as it is about television" (Ben, interview 14.7.95). The production emphasis is not upon the construction of the ultimate behavioural sequence filmed in fantastic quality, but upon the whole style of the programme. This style was a radical departure from methods of inscription and presentation which had been used previously. *Watch Out* makes extensive use of library footage, footage filmed on video, and new non-linear editing techniques. The technology is used to increase production rate rather than to focus upon increasing picture quality and the quality of inscription. Many of *Watch Out*'s developments have been inspired and innovated by the fast turnover and delivery of children's television. *Watch Out*'s two slots cater both for younger and older viewers, and the programme operates on a number of levels, sometimes as comedy and satire, sometimes featuring vox pops with both children and adults, but primarily as a way of providing a large amount of information in an engaging way, in a short time. This was a lesson that seems to have been largely derived from children's television, particularly *The Really Wild Show*.

The creativity and versatility gained from working in this type of programming, as opposed to the methods of blue-chip film-making, now seems better for furthering individual's careers. There are an increasing number of people in the top level of the Unit, who had come from children's television with its stress upon cheap, fast and innovative production, rather than upon the pursuit of images through blue-chip natural history films.

> "It was training ground for most of the people who are in positions of power now. I mean Alastair Fothergill was *Really Wild Show*, Melinda Barker and Sarah Ford, the only two female producers were *Really Wild Show*. Hilary Jeffkins isn't a producer on the *form*, but she has made a lot of programmes, and she again she was *Really Wild Show* too. I think the people who come from that seem to have done rather well" (Jenny, interview 21.7.95).

Watch Out established a different form of creativity for the Unit through recycling the styles of television itself into a new format of natural history. The innovation of this new way of presenting nature is that it gives recognition to the medium of television in a genre that has a long history of rendering the means of its representation invisible through a committed naturalism. Previously naturalistic forms of inscription were subverted through unusual camera angles, zip pans, duck shots, and special lenses like beehive lenses, inspired by popular television programmes like *The Big Breakfast*, produced by independent television companies, rather than trying to emulate scientific representations. Other ideas are borrowed from established styles and genre clichés like horror and science fiction, music videos, art house

films, and other documentary styles. The derivations and styles vary with the producer on each programme; some do borrow from more traditional styles of natural history television presentation. There was no attempt to pioneer the capture of images of nature never seen before. Indeed, much of the wildlife footage had already been 'inscribed' earlier, and was recycled library footage.

Watch Out developed over the summer of 1995, with a brief reappearance in 1996. However, writing over summer 1997, it seems to have failed to realise its potential. *Watch Out* had come to Michael Jackson, the controller of BBC2, effectively for nothing; it had been funded by the budget of continuing education. However, money at BBC2 was so tight that Jackson was budgeting this money with the same criteria as the rest of the BBC2 money, that is searching for the highest ratings for the best value. *Watch Out*, as a ten minute slot was unable to deliver sufficient on screen; ten minute slots just inherit the previous audience. There were no ten minute slots before 9 o'clock on BBC2 during the week, so *Watch Out* was also unable to attract the diversity of audience it was designed for. BBC Worldwide had been interested in acquiring the video rights for monthly compilations, which could have generated the money required to finance a new series. However, monthly programmes proved impossible to schedule. There were also problems funding the internet pages, the only system to recoup the cost would be to charge subscription to the web site, but that would have put it into direct competition with the *BBC Wildlife Magazine*.

Perhaps *Watch Out* will remain a one off experimentation. Certainly, there are people in the Unit who felt that it went too far in its presentation of natural history and would alienate established viewers, whilst others feared this excess would be interpreted differently by the younger, media literate audience which they were trying to attract. "You can get a very cynical audience, that kind of look at it from a sour point of view like, oh they are trying to make wildlife really young and trendy. Because a lot of the stuff at the moment is trying to be so trendy, that I think it you know, it does go overboard sometimes" (Susie, interview 19.7.95). Whilst I was at the Unit John Birt apparently reported on how impressed he was with *Watch Out*, but when I left there was no forthcoming commission, so it failed to impress on the basis of the ratings, sales and costs that would encourage the channel controllers to ask for more. Some of the ideas have resurfaced instead in *Tracks*, a leisure-orientated countryside programme produced by the BBC in Birmingham.

Despite the ambiguous success of *Watch Out*, many of the ideas and trends suggested by the series are mirrored through out the Unit, to be incorporated into traditional strands and other new, though perhaps less idiosyncratic, programmes. The increased awareness of other television genres and broader expertise through the Unit, an openness to humour within wildlife programmes, a concern with minimising costs, and a different relationship to scientific presentations of natural history can all be traced in natural history programmes apart from

Watch Out. There is a greater attention to, and reflexivity about, narrative in natural history films, with script writers self-consciously exploring methods of constructing characterisation, drama and suspense[36], and drawing upon existing formats far removed from scientific styles of presentation. After the lecture formats of *Look*, the grand theorising of *Life on Earth* and the stunning visuals of *Supersense*, the programmes associated with *Watch Out* looked more to the narrative style of soap operas, the appeal of sport events and, occasionally, elements of horror. The Natural History Unit is now not only looking to scientists and technology to provide new stories, but also to television expertise, multimedia environments, and new media genres for ways to take wildlife film-making forward. Although the radical, anti-realist style of film-making seen in *Watch Out* has been lost in favour of a more traditional form of inscription, the blue-chip genre of natural history film-making has incorporated these innovations through a range of new metaphors for interpreting animal behaviour. These are sometimes explicit, but more often they are naturalised through naturalistic forms of filming.

Insects featured in a *Wildlife on One*, suggest a different way of approaching a beetle community: "Mike is doing a programmes about beetles now for *Wildlife on One*, and I think they are trying to, sort of, base it on the story of a little village community" (Ruth, interview 17.7.95). Popular sport analogies have surfaced including the two football teams of meerkats, again on *Wildlife on One*, and the cricketing squirrels in *Nature Detectives* whose narratives and narrators parody the television commentators of sport. Members of the Unit with whom I spoke talked of their inspiration from films like *Terminator*, Tim Burton's classic *Batman*, *Edward Scissorhands*, and the work of the director Ridley Scott, using science fiction and gothic styles to interpret animal behaviour and add atmosphere to footage. This approach can be seen in the series *Alien Empire* which not only used a visual style that had resonance with *Supersense*, but also referenced a series of non-wildlife films to create an accessible new mood around the presentation of insects.

However, despite this media literacy, the networks of the Natural History Unit remain remarkably durable. Even at the boundaries of natural history into the realms of science fiction, they still cannot operate without science and scientists.

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[36]"This is this guy, Robert McKee, who does courses in story structure which some people here have been on. I went on one and my boss paid for me to go on one, Richard Matthews. And I think Paul Appleby's been on one, Keith Scholey. I think Alastair might have been. It's just a way of analysing feature films and why they work. And just based on the fact that: it's like saying your story must have a beginning, a middle and an end. You have to have a beginning and an exciting incident and the story progresses by reversals.... and a good story will have lots of reversals before it goes to a climax, which is resolved. I mean you need other things, like you need to identify with the character in the story for it to really work. And this is just a way of analysing stories which applies to books, to plays, to feature films, whatever. ... And this has been applied to natural history and that's when we have sort of dramatised natural history. When you actually, you relate to the animals and it's exciting. You're involved. You're there. You have a story. A lot of *Wildlife on Ones* now have a story. You know which is massive breakthrough for wildlife film-making" (Gareth, interview 11.7.95).

> Oliver: We are calling it *Alien Empire*, it's like a different world. I love films which can be creative with your mind, if you like, rather than bearing any resemblance to reality. You know like, *Bladerunner* by Ridley Scott or you know *Edward Scissor hands* or whatever. That's been the joy of the series you can just take an animal, an insect and put it into any environment that you want and you can just create a whole world.
>
> Gail: So have you been working with many scientists on putting *Alien Empire* together?
>
> Oliver: Quite a lot yeah to get hold of the animals, and to get hold of the stories. We have to talk to scientists. I mean at the bottom level whatever we are trying to do with *Alien Empire* it still has to be a natural history series, because it comes from here and still our main audience is expecting a natural history series. So it has to have all those elements of natural behaviour and the only way to get hold of those stories is to go to the academics, so they have had a big influence but then we've tried to take those basic elements and build in, or build them into the whole style of the series, which is the whole filmic thing (Oliver, interview 13.7.95).

The continuing reliance of the Natural History Unit upon its traditional networks, alongside its media innovations and the search for new accessible ways of representing nature history has involved a tendency toward biological determinism. New research into animal behaviour emerging from scientists like Cynthia Moss and Jane Goodall, which emphasises the social roles and behaviour within animal groups, becomes the soap opera of the animal world. There is a new concern with the role that individual animals play within animal communities. Individual members of species have assumed roles as unique personalities with particular contributions to social groups, as opposed to mere signifiers of their species. Marion Zunz drew upon Cynthia Moss's work on elephants for her film *Echo of the Elephants*, which moved away from the traditional narrative that follows the success of the male line from birth to reproduction to look at the roles played by post-reproductive females (though the film was completed by other members of the Unit following her untimely death). She outlined a new view of wildlife film-making as follows. "'It follows a family of elephants for two and a half years, rather like a soap opera' says Marion, who believes that producing natural history films is no different from making other programmes" (Sunday Telegraph, 23.9.90). Other series and strands now routinely construct the narrative around one individual, often involving constructing the film in the editing suite.

> "I think if you try and create it artificially then, it then it's difficult. If you are sort of saying oh we have decided to call this snake, you know, Helgar or something, and you keep seeing lots of different snakes, and they say, oh what's happened to Helgar now, and you know you are thinking - I don't believe this. You know, it's not real. Then it's a bit eggy. I mean some of the programmes that have been made like that" (Nic, interview 14.7.95).

The focus upon the more aggressive animals, follows the rest of the media trend towards violence. There has been a marked increase within the industry in the use of violence to sell natural history films, especially in the United States. This was first seen with the promotion of the home video of *Trials of Life*. In a series of television advertisements, footage from the videos was cut to form a tableau of sex and violence in the animal world, much to the distaste of the British producers. It was hugely controversial, but it was also very successful. Time

Life who had purchased the home video rights for the States from the BBC made a large profit. The triumph of this strategy was readily picked up, and American producers admitted to "exploiting the gore" on the basis that "we're competing with football" (US producer quoted in *Audubon*, 1994: 78). In New Zealand, this strategy is evoked again with the aim of providing something that would endure at least until the next day, when people will talk about it in the press: "Animal cannibalisation has a high appeal. You have to find ways of making people say 'oh shit'. We want to make people talk about it the next day" (*TV World*, 1994). Having pursued increased picture quality to provide something new to put on the screen, some wildlife producers are finding that increasingly violent footage provides a shocking way of producing something new. The Natural History Unit has tended to be more cautious about screening violence, though Keith Scholey, series editor of *Wildlife on One*, admits to detecting a move towards more violent footage in a number of films. He suggest that: "The natural world is very violent, it is a delicate balance. We do get complaints. The Africa hunting dogs will kill by disembowelling their prey, but we shouldn't prejudice the way animals are seen. It is the same as a news reporter covering a war, you have to portray what is happening" (Keith Scholey, quoted in *TV World*, 1994: 9). Whilst still appealing to naturalism, these films incorporate nature into cultural and social relations within the Natural History Unit which have changed dramatically over the forty years since Desmond Hawkins suggested the study of natural history as an escape from the horrors of war. The suggestion now is that the media themselves are the ones involved in a war for ratings:

> "It's a little bit like the development of warfare. You know, once somebody has got a nuclear weapon then the ethical considerations begin to get overshadowed by the practical considerations, hang on if we are going to able to survive, sod the ethics, we need to match their weapons. And that's actually a good analogy because that's really what happens every time there is a change in technology or attitude, you're raising the kind of weapons arsenal, and then the opposition says. Well, okay we may not really like this particular weapon that you have got, but we have got to match it" (Ben, interview 14.7.95).

Through a new media awareness, the Natural History Unit has managed to innovate to keep up morale within the Unit, and to maintain their output. This media turn is reflected in a new proactive relationship with the controllers in London, an internal management style concerned with developing versatile ideas and expertise, a new set of strategies for approaching the presentation of wildlife, and managing the impact of these programmes within the press and the schedules. It has proved a successful formula for maintaining the momentum and position of the Unit. However, it is not a strategy without risks. As the NHU attempt to ally themselves more strongly with other mainstream media to make an impact upon a mass audience, the attention that they receive can be negative as well as positive. For the NHU this brings the risk of renewed media interest in the ethical aspects of wildlife film-making, amplified by the Unit's move towards more drama in natural history films. The mixture of empathy for one animal evoked by a focus upon narrative, along with the manipulations of animals and violent animal

behaviour introduce an anxious tension, which can threaten the legitimacy of natural history films.

7.4. Something to Write About

The press media work to their own agenda and although they are keen to capitalise on the higher profile of the Unit, they are equally prepared to criticise. This new audience may be an important one to incorporate in order to increase the profile of natural history films, but it is not one that can be made stable or predictable. The very public antagonisms at the BBC have made this broadcasting institution part of the news round. The increased media literacy at the NHU, is more than matched by an increasingly cynical press. They have picked up the profile of sex and violence in films, to make what may be seen as rather glib points about ethical concerns in wildlife film-making since the sex and violence provide the news values wildlife films can deliver to the press. Additionally, the more aggressive marketing of the genre of the blue-chip natural history programmes, and the increased profile of David Attenborough within these, has raised a visible target for the media cynicism of the broadsheets. The 1990s is a media environment where destroying reputations pays. The Natural History Unit has traditionally been able to count upon sympathetic television reviews, with wildlife programmes frequently featured as television's pick of the day. The shared values of established press, traditional middle class audiences and producers at the Unit formed an easy alliances of self congratulation. However, the response of a more aggressive press to the more commercial position of the NHU represents the break down of these previous secure associations.

The reviewers have directed their attentions to the familiarity of the genre, and accusations of the established style as cliché, focusing particularly on David Attenborough himself. Whilst levelling charges of anthropomorphism at the films, reviewers are also very keen to stress the 'aren't they just like us' perspective, particularly if this ties into the current media concern about single parents, unruly adolescents or the latest moral panic. Others follow the guide of the press releases to focus upon the filming stories, the amazing quantitative facts or bizarre bits of information[37]. Not all reviews are disparaging and the Natural History Unit still picks up some very positive reviews[38], but they are no longer guaranteed. There are now a number of

[37]"The eyes of the female condor are red, while the male's are green - which is one of those priceless facts that might come in handy when meal time intercourse is flagging. I give it to you as a present" Lynne Truss, *Times* 23.12.94.

[38]Two reviews on the *Private Live of Plants* praised both David Attenborough and the technological breakthroughs in the programme:
"If television is a sewer then David Attenborough is one of its best disinfectants, his work invariably enlisted by anyone who wants to argue for the medium's cultural or intellectual value. This is a dull thing to say about the programmes but unavoidable; watching the *Private Life of Plants* it is impossible to imagine Charles Darwin, for example, turning away and saying 'I have far more important things to do than watch the television.'" (*Independent* 19.1.95.)

reviewers who routinely critique natural history films, ranging from the gentle ridicule of Nancy Banks Smith to the more vitriolic Victor Lewis Smith[39]. Some of these accusations appear as a serious threat to the integrity of the Unit.

These issues emerged dramatically with the review of *Life in the Freezer* by A. N. Wilson in the *Daily Telegraph*. *Life in the Freezer* gained many positive reviews across the press and provided the media event for which NHU was searching. However, Wilson was writing about *Life in the Freezer* in a different style to the one that was envisaged. He starts the review with a general attack on the development of the genre of blue-chip which *Life in the Freezer* represents, pulling apart the constructed scientific modest witness of natural history films in favour of the macabre entertainment of the fairground:

> "Many people who say that they like 'nature programmes' are probably under the impression that David Attenborough is a 20th-century equivalent of Gilbert White of Selbourne - a learned, slightly batty man who makes us see 'nature' through his own observant eyes. In fact, he is more the equivalent of an old fairground ham, and the delights on offer have more in common with the bear-pits of cock-fighting taverns of early Victorian slums than they do with the old naturalist's hides and observatories".

He follows this with a specific and personal attack upon the management of nature by Alastair Fothergill:

> "We are going to watch a leopard seal catching a young penguin and mauling it to death. The chances of a cameraman being in the right place at the right time to capture such a scene in the wild are inconceivably remote. So, this little piece of slaughter has been arranged for us by Attenborough's producer, Alastair Fothergill".

He continues with an emphasis upon the proliferation of violence in the film:

> "There was no seal fight, so we had to make do with a bloody encounter between two giant petrels (every bit as lurid as cock-fighting) and the sight of predators pecking at the corpse of a young seal".

And ends sarcastically, with an acknowledgement of the many values with which nature can be associated:

"Those precious seconds ... will be seen repeatedly all over the world; studied by botanists (for more discoveries were made by the use of this most sophisticated time-lapse photography yet), and preserved for ever as part of human knowledge" (*Times* 7.1.95.)

[39]In a review entitled "Why gore scores in the ratings war" about the episode of *Wildlife on One* featuring footage of Leopards shot with a sensitive video camera that enabled pictures to be taken in the dark, he characteristically writes: "I'm rarely happy with nature films. The genre has been indulged for years, because it apparently combines respectable ratings with educational worthiness, but I'm increasingly convinced that they're simply how people who live in Pinner and don't have access to snuff movies, get their regular fix of sex and violence. Worse, they're being held hostage by technological gimmickry. Before night time photography was possible, we used to see documentaries about leopards hunting in day light, and, now cameraman have ultra sensitive equipment, we're told they spend all day up a tree, fast asleep, which is simply not true. But my biggest problem is with Attenbore, a latter day version of the humourless men who used to turn up at school with a slide projector to present natural history lectures" (*Evening Standard*, 21.4.95: 31).

> "To reassure viewers who thought they were still watching a dear old 'nature programme', there was some soppy music at the point while we were shown young seals being suckled by Mum. Aah! Isn't 'nature' wonderful?" (Wilson, *Sunday Telegraph*, 12.12.93).

Alastair Fothergill sent a memo around the whole Unit which included both Wilson's accusations and his response published the following day in the letters page of the *Daily Telegraph*; he also mentioned that the NHU was deciding whether to sue. In his reply, he took pains to defend the practices of natural history film-making and the integrity of their methods and representations of animal behaviour, whilst admitting the impact of violent footage of natural events.

> "No one working for the BBC Natural History Unit would ever consider feeding baby penguin chicks to seals. The fact that he considers 'the chances of a cameraman being in the right place at the right time [...] inconceivably remote' goes only to underline the enormous amount of organisation, persistence and sheer determination that went into filming".

Of the other charges:

> "*Life in the Freezer* does include two powerful sequences of leopard seals feeding on penguins, but it is a series remarkably free of predation. At the Natural History Unit we are well aware that a small part of our loyal audience find some sequences in wildlife films a little difficult to watch" (*Daily Telegraph*, 19.12.93).

A.N. Wilson followed this with a published apology. However, the accusations seem to have lodged in critic's minds, if not in those of audiences, and my informal observations of natural history film reviews subsequently find his claims about baiting emerging with some frequency.

The movement of the Natural History Unit further towards the values of television has wide ranging implications for their many of their traditional associations with scientists, audiences, critics and animals. The previous networks with scientists based upon trust and personal contacts are undermined as the media representations move further towards drama[40]. Despite a move away from straight scientific presentations of natural history, the Natural History still desperately needs to retain their good relationship with scientists to provide increasingly accurate scientific information necessary to prepare exact costings of the programme shoots. The management of Natural History Unit's networks also means ensuring its position as a public broadcaster, whilst competing for domestic audiences and defending its market share overseas. Preserving its integrity and defending the veracity of the footage produced and the practices through which their films are constructed are vital to the continuation of all these networks. Richard Brock suggests that they should be looking more closely at the ability of the press to 'bite back'.

[40] "You do come across situations where you say BBC to scientists and they say sort of sod off, because somebody has trampled on them. It's so easy in telly, you rush in and before you go it is the most important thing in the world. And you lavish all this attention on these people. But as soon as you are out there and you have got the shots, pschaw, you don't give a damn. And it's not you just you don't give a damn, that's not true, it's because the next shoot is piling up on you" (Iain, interview 19.7.95)

> "And I said to Alastair - some of those things should be on, on our notice board and not just praising because, you know, the press are looking into this. And these are, these are big newspapers. These are quite clever writers. You're not talking about sensational *Daily Mirror* just having a go; you're talking about people who count. And, therefore, that should be on our notice board so that we can see it. Not everyone looks at the papers. And I don't look at all the papers. But I think you've got to watch that" (Richard Brock, interview 15.6.95).

7.5. Conclusions: Looking Back and Looking Forward

The present position of the Unit marks a stark division between looking back at the past success of the Unit, and planning for the future. However, it also represents the Unit looking more than ever to its position in a wider media context, itself undergoing accelerating change. This chapter has given an account of some of these processes; the NHU is looking to preserve its reputation whilst adapting to the new BBC environment; it is keen to maximise its impact in the schedules whilst managing the nature of this impact. The Unit is now as anxious to manage its external identity as its internal affairs, and this provides pivotal new roles for managers. The Unit is also looking at other media for further ideas on the development of the genre; ideas that draw upon, even parody existing media formats. The natural history film-making that results is now as much about television as it is about natural history. And the practices of natural history film-making are now concerned with the new environments of television efficiency and accountability.

The new economic imperatives and the new concerns with the ever-circulating fashions and drives of the media have the effect of erasing the history of the Unit to those people within it. As a consequence Anthony suggests that my questions, indeed the basis of the thesis, may be irrelevant:

> "I don't think you'll get people reflecting back. You know that's like any company, it's not really history. A company is a going concern, and that sums it up, . It's a going concern, tomorrow will be different, actually yesterday doesn't really matter. So I think I don't think it is that important" (Anthony, interview 3.8.95).

The changing contexts of television continually alter the parameters within which the Natural History Unit operates. The definitions of quality, the assessments of success, the skills of the Unit and the demands of the controllers have all changed through history. However, each movement does not immediately erase the previous context, and each shift leaves traces of its predecessor in place, which further complicates an already complex process. The historical development of associations around the Natural History Unit has laid in place a certain set of structures, developed a certain set of resources and staff expertise, and led to the recognition of a clear genre for natural history film-making at the Natural History Unit. The Unit's history is its identity, and like any identity it is fluid and shifting, sometimes presented in a particular way, other times remaining hidden. In the next chapter, which is my final empirical chapter, I

want to explore how the ways that animals have been inscribed, representations globalised, audiences incorporated, ethical and environmental issues overcome and the Unit managed throughout its history, provide a set of institutional networks that individuals have to negotiate in the processes of doing natural history television.

VIII
The Commissioning Process:
A Year in the Life of the Natural History Unit

> "As a head of a specialist department I am working to two controllers, who know nothing about natural history; they have both come from an arts background. They know natural history programmes do well for them; they know the BBC should be doing natural history. And they come to me and say: "Okay Alastair what shall we do next? What is the new idea?" And my job is to decide out of the many ideas that the department wants to make, which are the best to put through. It is a difficult decision, and it is a combination of what is the best idea, whether that is the right time for that idea and the third thing is whose here to make it. If we cock it up we will soon not get any more work. So it is a difficult balance".
>
> (Alastair Fothergill, interview 16.6.95)

8.1. Introduction to the Editorials

In 1995 I spent just over ten months with the Natural History Unit; starting with initial investigations in the archives in February, through a summer of intense interviewing, and into an autumn of completing research strands. It is from this research that the stories of the previous forty years of wildlife broadcasting have been pieced together. These accounts show it is possible to trace the shifting relationships between scientists, broadcasters, film-makers and television executives, and the different values of programme quality and changing audience measures for assessing wildlife film-making. However, as well as furnishing the framework of history, these are issues that the Unit also have to negotiate on a day to day basis, without the clarity of hindsight. These debates are evident in the development of every individual production, but are perhaps best exemplified by debates over commissioning new programmes. Here, instead of looking backwards, the Unit has to try and look forward and consider how to produce the milestone programmes of the future. In this chapter, I want to give an account of the Unit meetings over the summer of 1995, exploring the development of the editorial process though which decisions are made over future programmes, assessing their outcome and examining how members of the Unit are represented in these processes. Using a language of risk, I want to suggest that the historical networks of natural history film-making influence the future of natural history film-making.

The most significant decision-making process in the year of the Natural History Unit is the Editorials. In this process, Alastair Fothergill manages programme ideas from the Unit; balancing the constraints and opportunities of the networks of natural history film-making to produce programmes which can bring innovation, but also support to the way animals, co-producers, audiences, scientists and film-makers have been incorporated. Ideas are carefully selected in the spring, they are then put forward to channel controllers, where they must compete for money and slots with other departments and independent productions. The channel controllers and Head of the Unit meet several times over the summer to decide the programmes to be made over the next couple of years. The preparation for these meetings and

the results are conveyed to all members of the Natural History Unit through a series of Unit meetings. These Unit meetings are held approximately every couple of months. They are the only time the whole department meets together, and for these purposes they move out of their converted Victorian houses into a new part of the site; to the conference room where they sit in rows in front of head of department, Alastair Fothergill. The makers of radio and television programmes, blue-chip specials and British magazine programmes, from senior producers to new researchers all attend these meetings to discuss Unit matters, to talk about ideas, to discuss films, and follow the progression of the Editorials.

The meetings generally take all morning and are divided into three sections. First, there are updates of current developments at the BBC, presenting the implications of current news about the BBC for the Natural History Unit - the need to cut overheads and downtime, the commercialisation of the macro studio, the loss of the in-house cameramen and reports from staff feedback. Secondly, there is a presentation of progress made in editorials. Programme ideas for each channel, at every price range, which are going forward to the controllers are introduced, their reception summarised, their scope refined and their progress monitored. By the end of the summer this section of the meeting will comprise more or less firm offers for commission. The third part of the meeting is feedback on films. Fothergill reports the controllers' opinions on programmes, sheets of audience figures are circulated and Wildvision summarise the overseas sales. The remaining time in the meeting is then taken up by the Unit's discussion of films. Alastair Fothergill chairs the discussion as members of the Unit take the place of the audience, to offer feedback, comments, views and opinions on films produced by other members of the Unit.

Three times over the summer of 1995, I joined these meetings. At the first meeting, ideas going forward to editorials were discussed; at the second, preliminary feedback from controllers was presented; and at the third, a clearer idea of films that would be commissioned was revealed. I continued to have interviews with members of the Unit throughout this period, which provided insights into the role individuals felt they played in this process. Different people in the Unit, having joined at different stages, with different ambitions felt differently incorporated in these decisions. The history of the Unit represents childhood entertainment through to career fulfilment to members of the Unit, and provides each with a unique set of resources, expertise and future ambitions. Some of these will be fulfilled through the commissioning process and some will not. For some people attending the meetings, the process will have meant that they can continue in their position; for others it may mean a change of emphasis in their work; for others the loss of a job.

The commissioning meetings in 1995 came just after considerable press coverage of further cuts at the BBC: 8% efficiency cuts for that year, following 2 years of 5% cuts, which affected the money available at the editorials. The moratorium on new commissions brought in to

reduce the £200 million overdraft finished early that year, but had resulted in the decommissioning of a *Nature* special and 3 *Natural World*s, and had pushed a number of programmes forward into the year 1995 to 1996, further restricting the slots and money for new programmes. At the beginning of the summer, it looked likely that early autumn would bring a dip in numbers of programmes and staff, as summer programmes like *Nature Detectives* and *Watch Out* finished and there was relatively little to fill the gap in the Unit. One new researcher explained how this affected his position within these meetings:

> "This ban or moratorium on commissioning has obviously affected us, or will affect us very soon; the fact that in a few months time, there are a lot of programmes finishing and not many starting. And from a personal point of view that could affect me very directly as I won't have any work" (Adrian, interview 26.7.95).

For the Natural History Unit, the programmes that go forward may write the next bit of history, or may be forgotten. This chapter therefore presents a very different perspective on the networks of the Natural History Unit. Whilst the historical chapters recover past motivations, they are stories about how decisions have been made and how things could have been otherwise. This chapter focuses instead on the uncertainties of the active processes through which members of the Unit seek to support their claims of quality, expertise and experience to make programmes for the future, and it therefore presents an opportunity for people to reflect on how things could be different. Whatever the outcome of the Editorial process, the ideas are extremely sensitive to different people and different organisations. In light of this, I will only discuss the few ideas that have received publicity in arenas like the *BBC Wildlife Magazine*; some programmes which did not make it through; and those that have already gone through the whole process and have been transmitted by August 1997.

8.2. The Production and Consumption of Natural History Films

The commissioning process requires the Natural History Unit to look both to its external associations and to its internal expertise. There are internal debates over programme quality; as Alastair puts it "what constitutes the best programme, at the best time, made by the best people". These have to be balanced against external competition for BBC resources, co-production opportunities, scheduled slots and audience attention. The commissioning process focuses upon the links between macro structures and micro practices, as people within the Unit have to compete to get ideas commissioned, to work where they want and to do the programmes that they want. The commissioning process also focuses upon how decisions are made over how to evaluate the constraints and opportunities in the networks of natural history film-making. Some of translations of entities into the Unit are stronger than others, and are therefore more predictable, and the weak points in the network emerge as key points of contestation as members of the Unit seek representation.

I want to try and extend traditional applications of network analysis to think about how these choices are made. Network analysis characteristically involves looking backwards and following actors historically, as they make associations and build their worlds - actor networks which are constructed of entities which can be made stable, mobile and combinable. I want to suggest that ANT can be used to reflect upon the way that decisions over the future are made, using a language of risk. To recap briefly, the translation of the entities comprising the networks of the Natural History Unit requires two things. An entity must first be enrolled so that they participate in the network, and then their behaviour must be controlled to make their actions predictable. For linkages of the Natural History Unit to scientists, animals, controllers, co-producers and audience to be successful the actors must share explicit interests, which involve redefining goals or the ability of the Unit to 'colonise' the world of others.

The historical chapters of the thesis have demonstrated shifts in these networks as actors are enrolled through methods of inscription, personal contacts, financial arrangements and audience figures. These chapters also demonstrate the different strategies through which the Unit has attempted to make these associations predictable through their relationships to science, definitions of programme genre, directing techniques, and the management of the Unit. However, not all of these are associations are as stable as others, and in looking to the future, members of the Unit frequently use a language of risk to articulate positions of certainty and points of uncertainty. Despite Anthony's protestations of the ahistorical nature of television, there is a clear relationship between the past, present and future within this language of risk. This history defines the scope of risks the Head of the Unit, controllers and co-producers are prepared to take, based upon the value for money demonstrated by established the successful genres, existing skills base, and the committed audience for wildlife films.

The day to day processes of doing television are necessarily now ones of risk. The rise of new performance indicators in television, means that the success of any programme can only ever be assessed once it has been broadcast, and audience and sales figures compiled and costs deducted. Previous programme makers may have looked to the educational aspirations of public service broadcasting, the professional broadcasting ideologies or the accelerating image quality internal to the industry as a way of defining the success or failure of a programme. However, the rise of 'Birtism' with its emphasis upon value for money, balancing costs, sales and ratings, means that success can never be assumed. Measures of success now depend on a calculation that involves audience figures and overseas sales, only calculable after transmission, and therefore never fully incorporated into the production process. Value for money is only finally calculated over a year later in the Programme Performance Reviews. The decline of non-monetary criteria for evaluating programme success, and the rise of this form of cost-benefit equation brings the Unit directly into an arena of attempting to manage and minimise risks.

Certain areas of the network are rendered very fragile, and therefore more risky, when trying to make decisions over the performance of future programmes. This is particularly demonstrated over the inability of the Natural History Unit to take the audience into the network *prior* to production. The audience is essentially unpredictable and uncontrollable and there are ambiguities around their preferences. Film-makers engage in various strategies for interpreting audience figures after transmission (Ang, 1991; Ettema and Whitney, 1994). I want to suggest however, that the increased importance of audience figures in the BBC means that film-makers are also involved in various strategies for claiming to represent the audiences *before* transmission. Notions about audience characteristics and preference become internalised within individuals in the Unit, and collectively within the Unit hierarchy, and form an important context in which discussions about risk take place.

A language of risk was used extensively by people in the Unit when discussing the commissioning process. Co-producers no longer take risks by supporting unproved formats. Controllers are not in a position to take risks with license fee funding. Safety emerges from the established associations between co-producers, controllers and audiences measures, and means that it becomes difficult to innovate beyond the genre of blue-chip film-making through which these translations are enacted. The approval of the controllers and co-producers, and the flow of money, are all based upon notions of the audience which are constructed as conservative, as Adrian implies

> "It's certainly is getting more and more difficult to make new programmes, though we are probably fairly safe at the moment, because the public seem to like the programmes, therefore the controllers do, and, the co-producers do, so there is money coming in" (Adrian, interview 26.7.95).

The majority of the programmes put forward during the editorials of 1995 reflect this tendency towards safety. For BBC1, the main aim of the editorials would be to obtain another commission of *Wildlife on One*. The programmes in this strands are half hour, expensive, blue chip films, and the Unit would expect to get about 13 programme commissions for one series. They have an average audience of 8.4 million, the highest figure for a documentary strand on BBC1, and they are expected to perform well against face stiff competition from *The Bill* on ITV. Other parts of the blue-chip package would be series and the specials. These deliver prestige and an impact in the schedules at about twice the cost of a *Wildlife on One* programme. The controllers look to the Natural History Unit for an annual event like *Life in the Freezer* and *The Private Life of Plants*. Ideally for the controllers, this would be fronted by David Attenborough. Mid price and cheaper ideas would be targeted at the evening slots outside of a *Wildlife on One* series, for example, looking at British wildlife like *Nature Detectives*, or trying something a bit different like *Natural Neighbours*. Other targeted slots would be the Sunday evening slot, the television equivalent of the Sunday afternoon walk; the seasonal tie-ins at Christmas, Easter, New Year and Valentine's day, as well as children's television. There are also a number of live events that are packaged for BBC 1.

The core objective of BBC 2 editorials would be to secure a commission for the *Natural World*. This series has an average audience of 3.7 million, with a production cost per hour of less than one-third of a *Wildlife on One*, though the cost to the BBC is same. This is due to lower co-production investment in the *Natural World*, which is an increasing problem for the strand. There are other blue-chip mini series aimed at BBC2, as well as *Wildlife Showcase* which shows bought-in films from abroad. The Natural History Unit also looks for programmes that could tie in with the BBC2's leisure slot at 8.30 in the evenings. Cheaper ideas for BBC2 have a wide range including live programmes, programmes using more library footage, and sometimes more journalistic or environmental programmes. Also targeted at BBC2 would be themed nights, and ten minute shorts; something unusual to attract attention in the schedules that would not get a place on BBC1.

However, as well as positioning programmes within the established slots on BBC1 and BBC2, the Unit also needs to innovate within these formats and the ability to innovate depends on keeping ideas continually flowing through the Unit, despite the restrictive commissioning process. Alastair Fothergill suggests that he is able to manage this process as a creative process because of the number of people working in the Unit. Different people will have different skills, and the size of the Unit means that it is conceivable to fund development time for potential ideas. Alastair suggests that this confidence means he can take risks with members of the Unit:

> "The fact that there is almost 170 people working here now, if you include all the Wildvision people allows you to take risks; it allows you to develop more formats; it allows you, through size, to have confidence I think is the key word" (Alastair, interview 16.6.95).

Alastair Fothergill's ability to take risks is, however, dependent upon the flow of ideas through the Unit. At the beginning of each meeting I attended he made the perennial plea of all media workers for more ideas; as he puts it "we live and breathe off ideas". There were calls for ideas on every kind of programme at every conceivable cost, and also for ideas on how to further cut costs. This flow of ideas is in turn dependent upon individual members of the Unit constantly looking out for ideas: "You've got to have your ears and eyes open and you get ideas from everywhere. From people, from reading, from seeing another film. Talking. And if you're not, if your feelers aren't out all the time, you shouldn't be in the industry" (Elizabeth, interview 25.7.95).

It from this flow of ideas that future programme ideas and skills can be developed. The Unit is managed to try and reap the benefits of being a large organisation, where ideas can be complied on a collective basis, information and ideas shared and television innovation pushed forward, rather than pursuing the inclinations of individual naturalists or producers. Ruth explains how this differs from the past, that programmes are now "an assembly of different ideas from

different people. [...] So, you know, now the whole is sort of greater than the sum of the parts and ideas coming in from everyone, rather than just the mandarins putting ideas in which maybe you know were getting a bit tired" (Ruth, interview 17.7.95). Ideas are now less the property of an individual and there may be some cost to an individual's ability to focus upon their own programme ideas, but this is seen as good for the Unit as an entity. So long as Unit members are confident and happy with what they are doing, this situation seems to be of mutual benefit. However, the success of pooling ideas is dependent upon maintaining people's belief and security in their jobs; success is dependent on people feeling they are genuinely contributing to the whole: Charlotte emphasis the positive:

> "People are here because they love the job and they love doing it, they are not here to make loads of money, because you don't make loads of money. Which is wonderful makes for, you know, a great sort of team spirit and a sort of unity in the unit really" (Charlotte, interview 13.7.95).

However, the position of individual members of the Unit is becoming less stable. People are on short contracts, often only for the duration of one production. Some members of the Unit to whom I spoke felt this move toward short-term contract work had reduced the training they would have received; certain people felt the lower pay in the BBC compared to the independent companies was no longer balanced by sufficient security; yet others felt that the new flexibility expected of junior staff was not matched in programme-making. The emphasis upon performance indicators has changed the creative atmosphere and sense of community within the Unit. I want to suggest that there are two implications to these changes. Firstly, the insecurity of members of the Unit threatens this rhetoric of collectivity, with the result that ideas are actually less likely to be shared. Secondly, those people who are able to negotiate the securities and restrictions in order progress in the Unit, are those members best placed to claim to traditional representations of the audience and to continue the historical development of the Unit through particularly ways of innovating within natural history film-making.

The first problem emerges over how to keep ideas flowing as people feel increasingly under threat. With more people on short-term contracts, who will perhaps move more quickly through the Natural History Unit and independent companies, ideas become more important to individuals competing to progress their own careers, rather than investment in the organisation. If the social contract between individuals and the institution becomes more superficial and less binding in terms of the employers obligations to the employee, why should the employee give up freely the symbolic commodity that has the most value: the next good idea? There researchers suggested that ideas for innovative programmes are becoming closely guarded secrets, at precisely the time the Unit needs to draw upon all its resources. As Susie explains, that rather than being shared:

> "I think ideas just get kept very close secrets. And you know, they are like gold dust. I think people write them secretly you know in the dead of night they come back to the office and type up their idea" (Susie, interview 19.7.95).

The second point emerges within the process of generating ideas and getting on in the industry. Individuals talked about having to 'sell' their ideas to the head of the Unit[41], or having to prostitute themselves[42], couching their involvement in the Editorial processes in economic terms. They suggested moreover that the basis of selling ideas involved making claims about how audience would react to the film, in ways which resonated with the experiences and expectations of the Unit managers. As Ben suggests: "you sell it on the grounds that you are going to see absolutely gob-smacking images of the sort that you have never seen before. And the public are going to mad over it" (Ben, interview 14.7.95).

The audience therefore emerges as a key point of negotiation in the commissioning of new ideas, as well as the assessment of past programmes. The inability of the Natural History Unit to predict the audience prior to commissioning means that Alastair Fothergill and the Channel Controllers will take risks on those individuals who are best able to claim to represent the audiences, particularly those that best correspond with their ideas of audience expectations match innovations of the past like developments of technology and improvements in picture quality. The audience proves to be the weakest point in the network because of the fundamental inability of any television programme to predict its audience response, prior to transmission. Rather than being translated into networks and made predictable, audiences cannot be 'captured' or 'controlled'. Ang (1991) suggests that this means that:

> "A constant sense of uncertainty thus haunts television's persistence and continuity as an institution. The audience, *sine qua non* of both television's economic viability and cultural legitimacy forms its ultimate insecurity factor because in principle there is no way to know in advance whether the audience will tune in and stay tuned. [...] How to get an audience is the institution's key predicament, even though this is not always acknowledged as such" (Ang, 1991: 18).

Official audience measures can be used in different ways to support existing programme-making strands. For example, the most important measure of success for the blockbuster series may not, in fact, be its immediate audience figures, so long as it has a high audience appreciation index. *The Private Life of Plants*, for example, did not achieve audience figures as high as was perhaps expected with 7 million viewers. However, it achieved an audience appreciation indices of 93 out of 100, which was a record for the Unit[43]. Similarly, the educational value of the Wildlife Special is perhaps secondary to its popular appeal, and the ability of these programmes to achieve huge ratings both in Britain and overseas. The special on the Great White Shark shown in Easter 1995, gained a share of 43%, with an audience of 8.8 million, and was also spectacularly successful in the States, even though the market for wildlife

[41]"It doesn't matter what ideas you have, you have to sell them through Head of the Unit" (Anthony, interview 3.8.95)

[42]"We researchers say it is like prostituting yourself" (Nic, interview 14.7.95)

[43]These figures arrived in the library when I was working in the Unit.

films had fallen[44]. The amount of subsequent overseas sales may even be sufficient to turn a failure into a success:

> "The thing that I have got in my mind is *Natural Neighbours*, which I believe didn't do that well ratings wise. I think immediately afterwards it was probably looking like they weren't going to get another series, but then they managed to sell it well overseas, which means that it costs the controllers less money, then maybe it is worth while doing it. So that is another influence on whether programmes are made or not" (Adrian, interview 26.7.95).

The success of a programme about British wildlife may again be evaluated on a different basis, depending upon the trajectory of the figures. If the programme gains viewers during the series run, then the growing familiarity of the strand and its spread by word of mouth is taken as a measure of success[45].

The problems of evaluating the *future* success of any programme is, however, even more problematic. As television producer Silvey's comments demonstrate, it is extremely difficult to investigate.

> "We were sometimes chided for attaching so much importance to knowing what people *had* listened to. What about the programmes they would have listened to, if only they had been broadcast? A good question but an extremely difficult one to investigate" (Silvey, 1974, quoted in Ang, 1991: 148).

The process whereby individuals sell their ideas to the Head of the Unit therefore involves speculating about what programmes people *would have* listened to. A hypothecated form of audience becomes internalised within the networks of the Natural History Unit. The point of the production of new knowledges about nature is therefore simultaneously also one of consumption. The process of producing programmes involves constructing a particular conception of audience within the Unit and then claiming this audience exists outside the Unit.

> "The ideas about what could be made are always way ahead of what gets commissioned. Commissioning editors have to be cautious. You know they're operating in a commercial market place, they have got to know that there is an audience for this. And an audience doesn't just happen it is created" (Ben, interview 14.7.95).

As Ben suggests, ideas within the Unit are always ahead of what gets made, and there is a recognition that audiences have to be created. Programme ideas can be costed, researched and scientific assistance obtained, however, the audience cannot be predicted. I want to suggest that, because of the inability to predict audiences in advance, the first steps towards creating this audience takes place discursively within the context of the Unit, and this becomes a point

[44]These figures were circulated in the NHU meeting.

[45]This evaluation was suggested to me by someone in *Nature Detectives*, where they did not receive the same sort of pre-publicity as the blue-chip series.

within the network where knowledges of nature are actively produced and consumed by the film-makers themselves.

> "We think we know what the audience want, but I don't think we have got a clue really. I also wonder the older and more cynical I get, whether we are actually making them for an audience anyway. I don't think we are. I think you make a programme that you think is going to be good, and also you make a programme for your peers. I suppose, if people were honest [that] is what is most important, the people that they listen to most" (Jenny, interview 21.7.95).

This is the function of the third part of the Unit meeting, where films are discussed. This forum is one where the members of the Unit introduce and evaluate their own films, and are able to put forward their differing claims to represent the audience. There are a series of complex and heterogeneous processes through which the audience is constructed in the Unit, in which the Unit meetings play an important part. Three programmes are discussed at each meeting, the titles of which have been circulated previously on e-mail. These are covered in turn, with Alastair chairing a discussion, and focusing questions on a range of people in the Unit: the producers and series producers of the programme, the financial managers, and other people in the room who have seen the programme. However, even within this forum who is listened to means that some people are better represented than others. Thus the *internal* audience has a tendency to reflect the distribution of power within the Unit. Some people are further incorporated into the internal audience than others. The internal audience therefore has a strong tendency to preserve the status quo:

> "We have Unit meetings and Alastair sits at the front and everybody else you know sits in rows and we discuss programmes. And historically, it's always been kind of the mandarins that have talked about the programmes and put their points of views forward and of course nobody else dares to say anything because if they have said that it is rubbish then you know it's rubbish" (Ruth, interview 17.7.95).

Having been in the Unit for 17 years Ruth is able to speak with authority. However, Charlotte explains how a young researcher may feel within this process:

> "All the producers in the unit were saying 'Oh I didn't like this, I didn't like that'. It was stupid and, you know, I was sitting there biting my tongue. I am sure that you know, everybody in the room has got a different opinion from what is being said, but, you know you are not in a worthy position to even speak" (Charlotte, interview 12.7.95).

The most potent issue moving film-making forward into the future is the unpredictability of the audience. This is therefore the point around which risk-taking coalesces, and the concerns of controllers, Unit managers, producers, directors and researchers, all with different ideas of the audience, come into conflict. The issues over the production and consumption of natural history films become conflated in the sphere of production, due to the inability of the network to make the audience stable and predicable. The different positions of power, and the different representation of people within the Unit, means that although innovation has to take place, this is likely to cautious. Resolving the issues of getting on and getting up for researchers within

the Unit increasingly means fitting in with the *status quo*, and stabilising the associations within the Natural History Unit:

> "I suppose the people who move up are the people who fit in with the people at the top. So maybe it never changes. I hope not, but I hope it doesn't, I hope it's not like that. But I imagine it's maybe how it is" (Jenny, interview 21.7.95).

The fundamental dilemma within television between the necessity to search for the new, and the inclination to play safe, both driven by the uncontrollability of the audience, becomes sharply focused in this production and consumption of natural history films within the unit. The history of natural history film-making is represented through the hierarchy of the Unit, with its historically constructed authority, expertise and judgements of quality. Researchers, now less secure, increasingly have to be seen to be creative, yet are constrained by the way this history is enacted through the Unit. The extent to which the genre of natural history film-making is flexible and open may be exemplified by the main programmes under discussion for the period of 1995 to 1996, programmes that all offered something new to the Natural History Unit, but that all seemed to contain echoes of the past.

8.3. The Future of Natural History Film-Making

8.3.1. "There will always be a place for the blue-chip film"[46]

Blue-chip films are still seen as the core output of Natural History Unit and they are still the films through which the Unit internally articulates its ideas about quality. In terms of the external associations of the Unit - its identity, its established slots and co-production money - *Wildlife on One* and wildlife specials have been fundamental to the continual success of the Unit, since *Life on Earth*. John Sparks suggests that "the series and *Wildlife on One* actually keeps about a third of this place going" (John Sparks, interview 13.6.95). *The Natural World* is perhaps financially less important, but the presence of a 50 minute regular slot on BBC2 for wildlife would not exist without this named strand. These two slots provide a continuity of quality, wildlife film-making that provides a focus and identity for the Unit. The strands have, however, faced problems recently. *Animal Hospital* was scheduled in the *Wildlife on One* slot on Thursday evenings, pushing *Wildlife on One* further on into the year. *The Natural World* is notoriously under-funded because of its historical reliance upon a dwindling co-production market, and has suffered a number of decommissions due to the moratorium on commissioning. However, Alastair remains committed to maintaining these strands and continuing to bring them up to date: "I think if you tune into *Wildlife on One* or you tune into *Natural World* it's better every year, it's new, it's fresh, it doesn't feel stale, it's quality!" (Alastair Fothergill, interview 16.6.95). In the commissioning process over the summer of 1995, gaining commissions for these strands was of paramount importance. At the end of the summer their

[46]Richard Brock, interview 8.2.95

continued existence seemed assured, although there was still no agreement over whether *Wildlife on One* would be a series of ten or thirteen. *The Natural World* had a firm commission for 12 slots and hoped for more the next year.

The blue-chip series is also of great importance of the Unit, and raised a number of debates that year. The fortunes of the Unit, rising under the leadership of Alastair Fothergill, were renewed by the return of the blue-chip natural history series *Life in the Freezer* and *The Private Life of Plants,* fronted by David Attenborough. These had proved successful for the Unit, and delivered wildlife into the schedules on BBC1 in competitive peak time slots. There were a number of potential ideas for the next blue-chip series discussed during the editorials. However, the ability of the blockbuster series to deliver a regular media event is now questioned, and there is a growing feeling that they are running out of things to film. As Gareth suggests they are desperate for further ideas.

> "They've got to a stage now where they've done most of the classic blue-chip things. They've done plants, they've done evolution, they've done ecology in *Living Planet*. They've done behaviour and *Trials of Life*. They've done the Pacific[47]. They're doing birds and they've done insects. They've done so many of the big groups and things which are obvious and easy to film. So we had this crazy meeting a few months ago and they were saying: 'What can we do next? What can be the new classic blue-chip series?' And no one had any ideas" (Gareth, interview 11.7.95).

The controllers were very keen for another blue-chip series, and Alastair Fothergill was obviously keen to deliver. There was a discussion over whether they could bring *Birds* forward, the David Attenborough series already in production. However, the participation of David Attenborough in these "thesis-type" programmes is dependent upon the income that he can generate from the tie-in books. Bringing the *Birds* series forward would not have left sufficient time for him to write the book. The importance of David Attenborough is still universally acclaimed by everyone within the Unit. He is popular with the controllers, he is greatly marketable in the States, and for the audience he represents the Unit. His continued involvement with the Natural History Unit, whether writing and presenting mega-series, or narrating *Wildlife on One*, is invaluable for the commissioning and sales of programmes, and for the diversity of subjects that the Unit can cover. In the end the Unit decided to put together a number of *Specials* on charismatic animals like polar bears, wolves and leopards that were already in production, to commission several more, and put these together as a series of programmes, each introduced by David Attenborough.

These were programmes that would be of clear appeal to the overseas market. They feature popular animals, were to be filmed with stunning photography and be fronted by David Attenborough. Indeed, John Sparks suggests that the co-production interest may have been a deciding factor in putting together and commissioning this series.

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[47]In *Nomads of the Wind*.

> "There is evidence that to some extent American co-production, with executives with those kind of tastes are slightly swinging. the output of this place, not entirely, but there's strong evidence of it. So all of our new specials for BBC 1 which you've got half a million quid, 600,000 quid budgets. Big budgets. What are they on? Surprise, surprise. Great white sharks. There's one. Polar bears. Wolves. Leopards. How about that for a selection. And all natural history on this planet, the big specials. They all come from the same class, all carnivores" (John Sparks, interview 13.6.95).

What would identify these individual films as a series was an introduction by David Attenborough at the start of each programme, and the technological breakthroughs, allowing the Unit to revisit these familiar animals and film them in the wild, with better quality footage than ever before. The stories would follow the classic blue-chip format tracing the cycles of the subjects, illustrated through stunning pictures of animal behaviour. Technology would continue to be important in opening up subjects for a different perspective on a familiar animal.

However, commissioned audience research on previous specials suggested that audiences are often unaware of the technological innovation involved. The wildlife special on Sharks shown over Easter 1995 revealed problems with this, even within the industry. The programme had been extensively trailed as the first programme to film sharks without a cage, and to feature 'natural' behaviour. A number of people in the Unit were bemused by the result, unable to distinguish what these advances had enabled the film crew to achieve. The series producer, Keith Scholey, explained in the meeting that sharks were usually filmed having been baited from a cage, with no examples of natural behaviour. This programme had used "critter-cams", cameras attached to the animals, to film natural behaviour from the point of view of the shark; a development that four years ago would have been unthinkable. He did, however, admit it was possible that people may have similar footage of sharks before, though these were likely to have been set up shots with rubber sharks.

This raises a difficult issue for the Unit about their reliance upon technological developments to innovate within traditional natural history formats. Their past success with recreating natural animal behaviour using sets and nudged animals means that if the ability to now film animals in the *wild* was to be a valuable way of taking natural history film-making forward, then audience have to be told of the difficulties that have been overcome, in order that they could appreciate the developments made. This new series seemed poised to deliver the required qualities for the controllers; a series on large predators, with a big budget, technological breakthroughs, fronted by David Attenborough. It could not fail. However, a number of people I spoke to were not entirely happy: the choice of animals was unadventurous, the idea of a series almost superfluous without an underlying thesis, and it suggested a worrying dependence upon the one 'personality'. Perhaps most daunting was the fact that, though the series seems assured of success, the Unit still find it was necessary to tell the audience why this is a good programme and why the technology is important. It raises the problem of how far technology can continue

to drive blue-chip natural history film-making if an increasingly sceptical audience have to be primed to appreciate these developments, which simultaneously admits that previous claims to naturalism were wrong.

8.3.2. "The Animal Hospital Syndrome"

Another strand of programming the Unit wanted to target for 1995 to 1996, was the more populist, cheaper programme designed to deliver British wildlife onto television without the benefits of co-production, and to continue the atmosphere of live programming. These cheaper programmes featuring animals is an area of television where the Natural History Unit finds itself in most direct competition with ideas from other BBC departments who are often able to provide these programmes without the historically high costs of the NHU. It is also therefore an area of programming where the Unit is increasingly looking for new ideas from television itself. A number of independent production companies and BBC departments are currently coming forward with cheap programmes using animals, which use the immediacy of the live filming, and incorporate animals into a soap opera element within documentary strands. This is perhaps best exemplified by *Animal Hospital*, the programme that was deemed to be most threatening to the Natural History Unit during my time their in 1995. *Animal Hospital* featured Rolf Harris and the plight of pets each week at the RSPCA animal hospital at Harmondsworth. The programme has had several series and spin-offs which have worried people in the Unit to the extent that they identified an "*Animal Hospital* Syndrome" as the Unit searched for a suitable competitor. Strikingly, Animal Hospital had been built precisely on those elements excluded from natural history films, the drama and emotional intimacy of people interacting with domestic animals. This apparently took the Unit by surprised and they were unprepared to respond:

> "It seems to be the case that other departments within the BBC are now turning to use animals more. So you had like *Animal Hospital*, it was enormously successful. And in a way we were caught, I think everybody was caught napping, because nobody imagined that it would be so successful. And it just wasn't expected. It wasn't expected by the department it came from; it certainly wasn't expected by us. I mean what are we doing with a group of wildlife film-makers here, of course we are wildlife not domestic pets, but even so why didn't we come up with that idea?" (Alison, interview 20.6.95).

The Natural History Unit mooted a number of ideas for the slot that would be their *Animal Hospital*; featuring animals and wildlife. Firstly, there was talk of continuing *Nature Detectives* the following summer, ending with a live show that could capture something of this spontaneity of *Animal Hospital*. However, summer 1995 had been a disappointing run for the *Nature Detectives*, largely due to scheduling problems and a feeling that it had reached the end of its run. There were two additional ideas that used elements of soap opera elements to follow family groups of animals in the wild or individuals through the hospital drama, each coupled with the mood of the live programme and the promise of a cliff hanger at the end of each

programme: *Back to the Wild* and *Big Cat Diary*. *Back to the Wild* offered a new twist on the *Animal Hospital* idea to show British wildlife and the additional problems of treating and rehabilitating wild animals by following the RSPCA wildlife centres for five programmes. *Big Cat Diary* was to follow family groups of cheetahs, leopards and lions in the Masai Mara on a weekly basis to trace their fortunes over a breeding season. *Back to the Wild* was transmitted in the summer of 1996, and *Big Cat Diary* in autumn 1996.

The appeal of these two programmes was evident. *Back to the Wild* directly aped the successful formula of *Animal Hospital*, as well as a myriad of other hospital watches, to get British wildlife on television. It featured a celebrity presenter from the popular hospital drama *Casualty*. It was a programme that was relatively cheap and played safe through its recognised debt to current popular television conventions. *Big Cat Diary* was another approach to repackaging popular places and charismatic animals. It built on ideas developed in programmes like *Echo of the Elephants*, to construct a whole series which looked at named individuals of species through the traditional story of the birth and raising of the next generation. *Big Cat Diary* filmed and presented the recorded material in order to try and recapture the experience of "being there". It also enabled the Natural History Unit to return again to the favoured shooting grounds in the Serengeti, when these were beginning to look jaded to all wildlife film-makers[48].

8.3.3. Environmental Programming

Debates over the environmental responsibility still resonated through the Unit in 1995, though programmes taking an explicit environmental position faired badly through the commissioning process. The title of *Nature* was brought up again at the beginning of the summer, with the intention of putting in for a selection of six specials. These all however failed to get a commission, despite hopes mid-way through that they might get a few. The diminishing progress of *Nature* provoked a debate in the Unit meetings I attended about the recent failure to address environmental issues. The debates circled, unresolved, as responsibility for innovating with environmental programmes diffused throughout the Unit. Ironically discussion returned in the end to ideas about making pilot programmes that looked back to the first *Nature* magazine programmes made in the 1983,

My discussions with people in the Unit subsequently revealed the dynamics of this debate, and the ways in which blame for a lack of will to develop environmental ideas circulated. Alastair suggested that the problem resided with the institutional structures of the BBC: "The BBC in my view doesn't have a clarity about how environmental problems should be covered. We do a bit, television features does a bit, a number of people do a bit" (Alastair Fothergill, interview 16.6.95). However, he was sure that there were insufficient ideas coming forward from the

[48]"That became a sort of punch line of the last Wildscreen. It became a joke line. You know 'Not another Serengeti film!'" (Richard Brock, interview 15.6.95).

members of the Unit on environmental issues. "There are not people knocking my door down saying we've got to make this film about this oil spill. There are an awful lot of people saying that we have got to make this film about this badger. May be it is because they think that is all that I am interested in, I don't think that that is the case" (Alastair Fothergill, interview 16.6.95). Other members of the Unit, however, suggested that they felt Alastair was not providing sufficient lead in advocating a place for the environmental programming. As Nic put it to me:

> "I think that the biggest gap in the Natural History Unit is environmental programming. We should be making a lot more environmental programmes and everyone sits around and talks about it, and has little brainstorming sessions. But I think that Alastair should lock five people in a room and not let them out until they have come up with some good ideas, or something" (Nic, interview 14.7.95).

Yet other people felt that they did not want to take personal risks in putting environmental ideas forward, thinking that they would not be well received by the Head of the Unit: "Alastair is very wary of them" (Gareth, interview 11.7.95). Others blamed the controllers for not commissioning environmental programmes, and of course, almost everyone blamed the audiences for not watching them[49]. Many members of the Unit seemed keen to suggest that somebody else should be doing something else to initiate ideas for programmes on environmental issues, but no one seemed to feel in a position to do anything themselves.

The only member of the department I spoke to who clearly wished to advocate covering environment issues was the producer, Richard Brock, who had been in the Unit for thirty years. He stated his position in terms of the responsibility of the Unit to the natural world and broadcasting community; using a very different language to other people in the Unit, couching his argument in terms of 'obligations', rights and 'wrongs'.

> "I don't think the Unit does enough on conservation. Obviously, that's my personal interest, but I think the Unit as the leading Unit in the world has an obligation to do more. And, of course, you can't get programmes on the air unless the Controllers want them. And it appears that the Controllers don't particularly want them. I think, for the Unit, that's quite wrong because these problems continue. In fact they're getting worse. And so the net result is that the audience will see, shall we say 'happy programmes' and I'm not saying everything should be gloom and doom, but there are a lot of problems out there and we ought somehow in an interesting way explain them. But at the moment what's happening I think is that we are doing what I call 'escapist natural history'" (Richard Brock, interview 15.6.95).

When I spoke to Richard Brock he was working on a brace of programmes on environmental issues that took footage shot by Eugen Schuhmacher back in the 1950s, and then traced the fate of those animal populations that he had filmed, and drew conclusions over what constituted a winner or a loser in the battle for species conservation. Called *Winners and Losers* the

[49]For one example Alison suggests: "People just don't like to watch them. In a department like this, you all have to look to your viewing figures and you have to produce what people will watch. Otherwise, the controllers will say no thank you and we don't want you to do anymore. And then you have got no possibility of influencing the world, and you lose half your staff" (Alison, interview 20.6.95).

programme was oriented around key species, and demonstrated the shifting context of conservation initiatives from protection from over-exploitation by hunting in the 1950s, to global issues of habitat loss. However, Brock suggests the winners that emerge are those species, like the Trumpeter Swan, that are charismatic, gain publicity through the media and attract the conservation interests of wealthy countries. It was at the time the only programme addressing these issues being produced in the Natural History Unit; and as well as illustrating environmental issues it did demonstrate some of the potential of the media to contribute to debate. However, during the summer of 1995, Richard left the Unit to complete these programmes, leaving those people who were sympathetic to his line further isolated. Charlotte explains this:

> "Richard Brock is now working independently, and he is producing programmes on conservation, and I wish there were more people like that, who are prepared to do something different. I think he may have been held back in the unit a bit because he wasn't making traditional style programmes, because he wanted to do programmes on conservation. And I totally admire him going and doing it on his own, you know, if he is not going to get the support from the BBC, he can make films on his own and then sell them to the BBC. I wish that there were more people like that here really. I think there are so many people who are just making the same sort of programmes" (Charlotte, interview 12.7.95).

The impression that to get on in the Unit you have to follow a particular format of programme-making, particularly blue-chip film-making, seemed to be further reinforced by this event, as is a sense of the growing loss of expertise to do anything else.

8.3.4. Conclusions: "The same very differently"

Over the course of the 3 Unit meetings I attended, a number of new initiatives were discussed. These tended to be cheaper programmes, using new technology like the small, portable Hi-8 cameras, and again to derive their innovative formats from other television programmes. One idea called *7-up Wild* involved the suggestion that camera equipment could be given directly to scientists to enable them to film the animals and areas that they were researching, in the matter of a television video diary. Two fifty minute pilots were commissioned based on this format, though the results have yet to emerge. It was hoped that something larger would grow from the beginnings of this new venture. Alastair Fothergill talked about the possibilities of capturing the excitement of new discoveries, being on the front line of science and perhaps even tracing environmental change. It is a new development for the Natural History Unit to give small colour cameras to those involved with science, rather than incorporating scientific expertise into their established production methods. It is a trend that clearly derives from the television fashion for self-authored video diaries, from the desire for innovative presentation of wildlife and a drive for cheaper programming, and it is clearly facilitated by the development of new inexpensive video technology which allows familiar animals to be (re)presented.

However, it also seems to hark back to the beginnings of the Unit. This innovation echoes the ideas and ethos of the film sequences incorporated in early programmes of *Look*. The difference now is the context of this development. With *Look*, scientific expertise was actively incorporated into the Unit. Forty years, on the divergence between the practices of natural history film-making and the research scientists is starkly revealed as the Unit has actively exported its camera technology outside the Unit into the hands of practising scientists, in order to recapture the immediacy of their scientific vision. In many ways, and ironically perhaps, this vision is precisely the type of 'inexpert' filming of animals that the Unit developed its professional abilities to counter. Iain explains that the appeal of this material is that it lacks the professional polish of the production standards in the Natural History Unit in order to represent an apparently unmediated experience of nature.

> "I like that feeling that it is an amazing thing happening right in front of them, right now. I like that, that's kind of immediacy. Sometimes these things that are badly shot feel like they are really happening at the time. [...] You get so sort of jaded, by close cut stuff, sometimes. Whereas when you go wide[50] you sit there, and you don't know what is going to happen" (Iain, interview 19.7.95).

7-up Wild promises to recapture a sense of authenticity, escape and unpredictability of nature that the Natural History Unit have lost in the constructing the networks of nature over the last forty years. The locations of expertise have shifted. Wildlife film-makers skills have changed, they have had to loose their naturalist skills in the transition to film-making and members of the Natural History Unit are no longer able to create the immediacy of this vision of nature. Professional scientists can no longer individually afford the time and money to create broadcast quality films. New associations are created, scientists are incorporated into the networks of natural history film-making in new ways and the network truly becomes a spiral, as Latour emphasises in *We have never been Modern*. These circuits and networks:

> "regroup contemporary elements along a spiral, rather than a line. We do not have a future and a past, but the future takes the form of a circle, expanding in all directions; and the past is not surpassed but revisited, repeated, surrounded, protected, recombined, reinterpreted and reshuffled. Elements that appear remote if we follow the spiral may turn out to be quote nearby if we compare loops. Conversely, elements that are quite contemporary, if we judge by the line, become quite remote if we traverse a spoke. [...] In such a framework, our actions are recognised at last as polytemporal" (Latour, 1993: 75).

When I interviewed Alastair Fothergill I asked him whether the tendency in television to play safe would mean that the future held 'more of the same'. He rejected my suggestion, though as he himself suggests the Unit faces a future that is the 'same, very differently'.

> "No, not more of the same at all, We are a conservative industry because people want that, and we will go on doing classic blue chip as well as we can and you could say that is more of the same, except that you know in the last *Wildlife on One* we had the first low light

[50]By a 'wide' Iain means a long, wide angled shot, where the animals can be observed interacting within the landscape.

> colour camera to make a 'more of the same film'. I would say that it is the same, very differently. I mean there is only so many animals on the planet, but we will continue to make straight natural history better all the time. The other challenge and the great challenge is to find new formats to find fresher ways of doing it. And I would point to you know, *Big Cat Diary* this idea of actually doing a true animal soap opera which I hope will appeal to a large audience, which is a new way of making Live programming. No, I don't think that it is more of the same" (Alastair Fothergill, interview 16.6.95).

The past is not surpassed but revisited, repeated, surrounded, protected, recombined, reinterpreted and reshuffled. The historical development of the Natural History Unit with its drive to control animals, production methods, filming processes and identity, constructs a past that is not surpassed. The associations on which it depends construct particular definitions of quality dependent upon methods of inscription, views of nature, types of spokesperson, formats of sequences, and media events. These are revisited, repeated, recombined and reinterpreted. Natural History film-making returns again and again to the same places, the same animals, the same stories and the same skills. They also consistently exclude certain ways of talking about nature that stress the local, the interactions between people and animals, and the environmental. These networks embody tensions, but they have proved amazingly durable, supported by internalised conceptions of their audiences. The empirical chapters of the thesis have used different milestone programmes to illustrate different points around this spiral, but perhaps the main characteristic of these networks is their durability. The elements linking these stories of natural history film-making are the images of animals on our screens, which weaving through nature and culture, reconfiguring the popular geographies of nature and (re)making modern myths of the relationship between humans and animals.

IX
Conclusions

> "What happens if we begin from the premise not that we know reality because we are separate from it (traditional objectivity), but that we can know the world because we are connected with it?" (Hayles, 1995: 8)

9.1. Introduction

In this thesis I have introduced many stories about the processes of doing natural history television. I have elaborated the social and spatial processes through which programmes from the Natural History Unit were able to dominate popular representations of nature on television over the period 1955 to 1997. Chapters 4 to 8 have explored the multifaceted orderings of nature that natural history film-makers undertake as they negotiate relationships between the practices of science and the demands of the media, expert knowledges and lay understandings, global representations and local experiences. The stories in the thesis blend histories of social, environmental, scientific and technological change, extending accounts of nature in geography by incorporating new forms of agency, featuring different voices, and illustrating changing institutional structures, in ways which potently mix the natural and the cultural. Networks of people, institutions, technologies, animals and environments have enabled the historically and geographically situated orderings of nature in the first natural history films to move over space and through time, achieving the status of global and universal representations of nature. The networks consistently privilege certain ways of representing nature, whilst persistently excluding others. In this thesis the stories of natural history film-making follow these actors within the Natural History Unit as they construct their own networks and negotiate their own histories.

In Chapter 9 I return to the aims of the thesis to assess the extent to which I have been able to capture and make sense of the complex history of natural history film-making, whilst developing the theoretical ideas articulated in the Introduction and Chapter 2. My thesis is the result of a long engagement with two sets of ideas, individuals and institutions represented by the BBC's Natural History Unit and Cultural Geography. Both have changed over the last four years of my PhD research. In the period 1993-1997, the BBC has experienced the simultaneous introduction of internal markets and deregulation of external markets, thus effectively removing the context for much of the history I have narrated. The ideas from science studies were newly articulated in geography in 1993 and have rapidly developed since. The thesis not only reflects these developments, but also seeks to make an intervention into these debates by demonstrating the value of actor network theory for understanding the Natural History Unit as a site through which contemporary meanings and materials of nature are contested.

The conclusion is divided into four sections. Firstly, I want to revisit the theoretical aims of the thesis. I was very much in sympathy with Donna Haraway's plea for new theories "whose geometries, paradigms and logics breakout of binaries [...] and nature/culture modes of any kind" (Haraway, 1991: 129). The persistent dualities between nature and culture, expert and lay, global and local hindered attempts to understand modern configurations of nature, in which natural history films play a part. Moreover, theories of modernity posited radical changes for communications, science and environments over the post-war period in which natural history film-making developed. The hybrid forms of natural history film-making offered an empirical illustration which problematised and enriched these theoretical positions. In Section 9.2 I return to the aims of the thesis and summarise the value of actor network theory for achieving a more detailed description of the contribution of the media to changes in the meanings and materials of nature over the past forty years.

In the second section of the conclusions I return to methodological questions raised in Chapter 3. I evaluate the power of actor network theory as an heuristic for managing the wealth of empirical material generated through my period of research in the Natural History Unit, and in this, my research makes a contribution to what is still a slim methodological literature. Chapter 3 raised issues about research narratives and research politics, problematising the positions from which actor network theory allows the academic researcher to speak. In section 9.3 of the conclusion I reassess the narrative the thesis has constructed, the new stories that it has been able to tell, and some of the exclusions it has reproduced. I suggest that some of these latter problems are in fact important points from which to raise new questions about the ability of contemporary academics to adopt interpretative and political positions outside the networks in which they research.

The third section of the conclusion discusses the empirical material presented in the thesis and explores the use of actor network theory for interpreting it. I suggested in the introduction that the histories of natural history film-making would figure in many other cultural, biogeographical, environmental and technological histories. The thesis has explored how natural history film-makers themselves negotiate this complexity to achieve and maintain their position within these dynamics. In Section 9.4 I will use these situated understandings to expand on the geographies and categories of knowledge which emerge from within the film-making community. I argue that these empirical observations offer alternative ways of conceptualising such homogenising processes such as globalisation, institutionalisation and popularisation and provide a variety of ways to intervene in the politics of natural history film-making. This thesis has been innovative in taking actor network theory into a complex field, making it work, and deriving fresh insights into the social and spatial practices of natural history film-making. In finally concluding the thesis, I want to explore the productive new areas for research this approach has indicated. Further work on the relationships between science, media and the geographies of knowledge have the potential to build on the empirical

materiel in this thesis and further explore the value of actor network theory for developing middle range theories that extend theoretical understanding and reveal rich empirical material in this area.

9.2. Actor Network Theory and Natural History Film-Making

I began this thesis by discussing recent theories which posit radical changes in the formations of modernity, suggested by an array of processes, such as the globalisation, commodification and institutionalisation of culture, economy and environmental risk (for example, Beck, 1992; Giddens, 1991). I rejected the apocalyptic pronouncements of the 'end of nature', proposing instead to track down more ambiguous stories from those actually involved in these processes. I suggested a study of the development of natural history films had the potential to complicate and enrich these accounts of nature in modernity, through narrating a more complex history of the last forty years or so, and by recovering points of debates in the construction of hybrid forms. This search for what have been called 'flatter' theories (Thrift, Driver and Livingstone, 1995) followed from my belief that such a narrative could account for the position of natural history film-making in the media over this period, without merely reproducing and reinforcing it through an analysis couched in terms of hegemonic ideology. Natural history films are clearly accessible to analysis which uncovers their contributions to discourses such as 'empire', 'capitalism' and 'patriarchy'. Rather, as I argued in chapter 2, actor network theory offered the potential to step back from theories which cede more power to the powerful than is necessary (Thrift, Driver and Livingstone, 1995), whilst opening up many more points from which to intervene in the social and spatial processes of creating knowledge about nature.

This theoretical shift was particularly appealing in its potential to avoid more deterministic attempts to explain the context and consequences of contemporary shifts in technology, environment and society (Negroponte, 1995). Take, for example, the temptation to explain shifts in technology due to changes in society; to explain alterations in subjectivity as a consequence of technological developments; or to make straightforward causal connections between technological change and environmental experiences. All are consequences of dualisms inherent in Enlightenment thought, and still evident in many theories of modernity. This thesis was conceived with the belief that natural history films *could be* instantiated within all of these shifts. However, in order to present a more detailed description of changes in personal experience and expertise, meanings and materiality of nature, and causes and consequences of technological change around natural history film-making, I sought to challenge these dualisms and determinisms by turning to actor network theory.

Actor network theory was appealing given the dominance of a duality between 'realism' and 'relativism' within contemporary environmentalism and attitudes to nature. An impasse had emerged between versions of 'social constructivism' in which nature is treated as an artifact of

the social imagination, and versions of 'natural realism' in which nature consists of substantive entities and objective forces (Soper, 1995). A division between research which emphasised the discursive elements of nature (for example, Duncan and Duncan, 1988) or reasserted a clear distinction between material processes of nature and the communication about them (Redclift and Benton, 1994), hindered exploration of the context, conflicts and consequences of natural history on television. I suggested in Chapter 2 that this difficulty could be circumnavigated by considering natural history on television not only as a process of representation, but more broadly as a process of constructing and communicating knowledge as it has been conceived in science studies. An application of Latour's (1987, 1988, 1996) account of the achievements of science through networks that extend over space, linking and reconfiguring it in the process, might help to think about how and why socially constructed facts about nature actually work for us, without appealing to realism or to relativism.

The thesis has also been concerned with the relationship between expert and lay knowledges of nature. Natural history films clearly play an important role in communicating scientific understandings of nature and animal behaviour to the general public. However, I found existing models of the popularisation process, which counterpoised expert scientific knowledge against media popularisation, unhelpful because they reify divisions between science and the media and between expert knowledge and lay understanding (Durant, 1989; Hilgartner, 1990). Instead, science studies emphasis the similarities between science and other knowledges (Wynne, 1992, 1996; Irwin, 1995). Science differs from other forms of knowledge due to its ability to move over space; and the mass media are an important part of this process. Communication technologies play a central role in extending networks over space through the associations they are able to forge between entities in the network. Thus I argued that technology is neither cause nor consequence - all networks which allow expertise to move over space are socio-technical.

The essential spatiality of actor network theory also provides a way of engaging with and critiquing the duality between the global and the local which underpins the rhetoric of globalisation. The geographies of globalisation (Murdoch, 1995; Thrift and Olds, 1996; Bingham, 1996; Hinchliffe, 1996) challenge the accepted ideology of globalisation, by not denying the ability of practices of scientists, capitalists and engineers to achieve universal effects. Rather they uncover a more contingent and contested process through which the complex geometries of globalisation are achieved. Actor network theory suggests that social life is configured by numerous inter-connected agents, variously composed of biological, mechanical and habitual properties and collective capacities. Its methods of research focus upon reconstructing interactions and positionalities. This demands an engagement with the living rather than the abstract spaces of social life. Actor network theory therefore aims to extend the register of semiotics beyond its traditional concern with signification as linguistic ordering, to encompass all kinds of message bearers and material processes of inscription such

as, technical devices, instruments and graphics; bodily capacities, habits and skills (Serres, 1995).

However, within the literatures of actor network theory different interpretations are emerging. The very particularised and located orderings that characterise John Law's 'modest sociology' (1994) contrast with the ever-expanding and increasingly concrete connections that constitute Manual Castells' 'Network Society' (Castells, 1996). Actor network theory includes the polemics and celebratory accounts of Latour for a new 'anthropology of modernity' in which the 'third estate of things' takes its rightful place (Latour, 1993). Donna Haraway meanwhile, emphasises situated understandings, ambivalent about the politics and achievements of actor network theory (Haraway, 1989, 1997). Whilst sympathetic to the broad tenets of actor network theory, my research has sought to negotiate these different accounts and explore their value in studying natural history within the networks of science and the media.

The form of actor network theory I have used emerges out of my reading of Latour, and his constructive critics (for example Latour, 1993, 1996; Law, 1994; Haraway, 1997). I argued in Chapter 1 that the study of natural history films has fallen outside traditional disciplinary boundaries and an approach like actor network theory, which eschews *a priori* categories, has the potential to deal with the many actors involved in both the construction of these hybrid forms and the management of their complex history. Actor network theory aims to expand the traditional constituents of analysis (human actors), to the wide range of material and discursive entities currently interlacing between the categories of nature and culture. Important developments in film and broadcast technology, the changing experiences of animals in science and entertainment, and the transformations in environments throughout the history of natural history film-making are thus theoretically incorporated at the outset with actor network theory. These material elements of nature, technology and institutions tend to be 'written-out' of textual analytical approaches which, while powerfully arguing that nature cannot be (re)produced outside social relations, are less able to deal with that which is not reducible to them. The historical approach of actor network theory offers the chance to construct a history that links ethology, changes in conservation, broadcasting and popular knowledges about nature. At the end of Chapter 2 I argued actor network theory offered a powerful way to reconnect the purifications in the genre of blue-chip natural history film-making with the complex translations required to construct this hybrid form of programme making.

The terms I found helpful in orienting this analysis were *purification* and *translation*; and within the process of translation: *inscription* and *enrolment*. The processes which create and sustain distinctions between categories such as nature and culture, expert and lay, and insider and outsider, are referred to as *purification* in actor network theory. The processes of purification draw attention to the ability of natural history films to present images of 'nature in the raw' in blue-chip films. From the first attempts of amateur naturalist film-makers to capture

nature unseen in Chapter 4, to the problems with environmental programming in Chapter 6 and the privileging of programmes which present nature without culture in a global market in Chapter 7, natural history films have created a 'purified' nature. Despite the complexity of the associations between science and natural history film-making, natural history films have repeatedly drawn upon an unproblematic category of zoological science through which to assert the integrity of their images and their distance from ethical debates on the use of animals in entertainment. Purification also refers to the Unit's ability to accrue value from controlling the circulations of meanings and material in networks, creating ownership through copyright and identity through its products.

Purification further indicates the tendency of academic analysis to follow these separations. As Latour suggests "critical explanation always began from the poles and headed toward the middle, which was first the separation point and then the conjunction point for opposing forces [...] In this way the middle was simultaneously maintained, abolished, recognised and denied, specified and silenced [...] How? [...] By conceiving of every hybrid as a mixture of two pure forms" (Latour, 1993: 77-78). Through theories which accept these *a priori* distinctions and through research practices which reinforce them, actor network theory suggests that academics have contributed to the purification of the realms I outlined earlier. Some forms of textual analysis are particularly prone to reproduce the separation between signifier and referent which has contributed to entrenched positions of relativism and realism (Demeritt, 1994a, 1994b; Whatmore, forthcoming).

In my research I have argued that purifications evident in the texts of natural history films only form one part of the networks of natural history film-making. Indeed the very notion of constructing images of 'nature in the raw' presupposes a much more complicated story about the existence of hybrid forms. Natural history films are not only interesting as the texts which result from cultural practices of representation; they also form an important part of the circulation of materials and meanings within science and the media. The authority of natural history films is not only legitimised through textual strategies, but also through the diverse associations of animals, environments, scientists, cameras, film stocks, controllers and audiences, which have supported the continual investment in natural history film-making over the last forty years. The influences of natural history film-making are not only enacted symbolically. The construction and dissemination of these representations through the media have material effects on the national parks, research stations and broadcasting centres involved in their production. I suggested that to look only at the semiotics of natural history film-making is to focus solely on their contributions to what Latour calls the processes of *purification* between the realms of nature and culture. This thesis has been concerned instead with the contribution of natural history film-making to the processes of *translation* between nature and culture. It has explored how a way of approaching and representing nature, forged in the cultural, technological and scientific context of post-war Britain and Germany, has been able to

dominate popular representations of nature on television in the Western media for the last forty years. This is achieved through the translations between people, places, technologies, animals and environments which feature in the empirical chapters of the thesis, and shape the contexts from which these texts emerge.

Focusing on the processes of *translation* thus reverses conventional analysis by starting from the middle. Analysis involves following the translations or associations that are forged between people and things as networks are built, and tracing how separate categories emerge from this 'ground level'. Rather than viewing every hybrid as a mixture of two pure forms, actor network theory views everything as hybrid and follows the processes through which purity emerges. As I have argued theoretically and demonstrated in the empirical chapters of the thesis, I have followed the translations involved in the construction of the networks of natural history film-making, and identified how purifications between nature and culture, expert and lay, global and local were embodied in the films. These aims were outlined in three questions at the end of Chapter 2 which drove through the methods and analysis of the case study. Firstly, I asked how nature was incorporated into the networks of cultural and social relations within the Natural History Unit through changing processes of inscription. Secondly, I questioned how these situated knowledges of nature were able to achieve power over time and space through processes of enrolment. Lastly, I asked what were the processes through which the Natural History Unit created and maintained its networks. To carry out this endeavour I found it useful to focus on two parts of the processes of translation: *inscription* and *enrolment*.

Firstly, I applied the term *inscription* to refer to the point of filming where animals and environments are incorporated into the network. The places and practices at the point of filming are keys to the construction of new nature-culture hybrids in natural history films. The changing processes of inscription reveal natural history film-makers changing relationships to scientists, show how film-making practices have shifted from naturalism to realism, and identify different locations from zoos and studios to research sites. The thesis thus considers natural history film-making as the generation of situated forms of knowledge about nature through the attention to inscription of nature 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. Film and broadcast technologies allow the images inscribed at the point of filming to enter the networks of natural history film-making. Scientists, co-producers, commissioners and audiences are enrolled into these networks through various strategies from the associations built around definitions of quality in blue-chip films, to the attempts to predict the audiences through ratings. Through these ability of the Natural History Unit to securely enrol these actors into networks, the situated knowledges of natural history film-making achieve the status of universal representations. This approach has the theoretical benefit of not categorising these practices into distinct fields of 'science', 'film-making' or 'broadcasting'. Instead, it allows analysis of the practices of how they become separately

defined, according to the links made between them. Finally, in looking at the creation of the long networks of natural history film-making, it is possible to identify how tensions inherent in these networks are managed: how the Unit works to retain the authority of its images; how innovation and creativity are shaped and constrained by the networks, and how ethical problems and environmental issues are countered.

My research has taken actor network theory into complex field, using its methodological approach to ask new questions of natural history film-makers and creating fresh insights into the processes of creating popular knowledges about nature. It has extended work on how knowledge is constructed within the sites of science to look at the media, and it has broadened the context of traditional production studies to consider how actors outside broadcasting institutions influence the relationship between text and context. I have argued theoretically that actor network theory offers a way of reconstructing the histories and geographies of natural history film-making, looking at the way that popular representations of nature contribute to changing discourses of nature and reconfigure non-discursive elements of nature. These theoretical statements have implications for the processes of doing research, as well as for the interpretation of empirical material. I want to return first to the methodological issues I encountered in extending actor network theory to the field of natural history film-making, before exploring the empirical and conceptual insights I have gained into the production of natural history film-making.

9.3. Researching the Networks of Natural History Film-Making

The methodological implications and possible problems of actor network theory were outlined in Chapter 3, where I explored the argument that actor network theory has a powerful appeal for overcoming theoretical schisms, by providing symmetrical accounts of the construction of socio-technical networks (Murdoch, 1997; Demeritt, 1994a, 1994b). In the methodology chapter I critiqued this position, arguing that the field is already constituted through complex power relations, which have to be explicitly addressed. The need to use a case study focus to make ANT manageable means there will be things outside the network of study and I suggested that it was actually impossible to treat all demonstrations of power symmetrically. In conclusion, I want to demonstrate where I feel ANT did provide a useful methodological tool: in conceiving the study, managing the complex empirical material, and incorporating conflicting accounts in the narratives that result. I also explore the limitations of the approach. My conclusion having tried to carry through the prescriptions of actor network theory is that it will have to modify its claims to absolute symmetry. These are not practically possible for any piece of research, especially within the constraints of the three year PhD. However, I still maintain that they are theoretically interesting claims, particularly valuable for reconsidering the relationship between the categories of 'insider' and 'outsider' in doing research. I want to suggest that in bringing up-to-date stories about the changing ways nature is represented, the

distinction between 'insider' and 'outsider' begins to blur. By its very statements of symmetry, actor network theory is more sensitive to how these distinctions are actively recreated.

9.3.1. Actor Network Theory and the Politics of Research

Actor network theory aims to enter the field with no *a priori* categories, ideas of cause and effect, structure or agency. I found this a useful approach to widen the context of the study from a narrow focus on one explanatory axis, such as class, gender, nationality or ethnicity. The global visions of nature presented in natural history films do reflect the gendered and class based development of British science and broadcasting, yet these categories are insufficient to explain their achievements. However, according to the view of ANT, there is nothing outside the network which drives the analysis. These categories emerge only from the processes of creating socio-technical networks which extend over space; they cannot be used to explain them. Analysis using actor network theory is thus akin to grounded theory, extended from the social to the techno-social (Glaser and Strauss, 1967). The analysis of networks is a process of generating "patterns or regularities that may be imputed to the particular that make up the recursive and generative networks of the social. They are nowhere else. They do not drive these networks, They aren't outside them" (Law, 1994: 83). These orderings are not as obdurate as a social structure, yet neither are they as volatile as the changing actions of individual actors. Structure and agency, macro and micro level are reconceptualised by the central role played by technologies in linking and reconfiguring these spaces. The links from the particular to the general are achieved as networks extend over space, aided by non-human actors, to reconfigure reality and constrain the agency of those involved in the network. This approach has radical implications for sociological approaches to case studies, which distinguish between insider and outsider positions. Instead, ANT suggests that "the inside and outside [becomes] an active category, created by the actors themselves not [one] already defined" (Latour, in Crawford, 1995: 257). This has implications for the processes of doing research as well as for drawing more general conclusions from the empirical material.

The conceptual insights and empirical narratives in this thesis emerge from an ongoing and iterative relationship between field and theory. From my first fieldwork at the BKSTS Symposium in 1993, through to watching programmes transmitted in 1997, I have aimed to maintain a dialogue between my theoretical ideas and the changing field of the Natural History Unit. The agnostic stance of actor network theory was valuable for keeping this conversation going; and the idea of networks was a practical way of mapping the huge amounts of material I generated. Actor network theory provided a methodological approach which asked questions about the associations that individuals forged, and the relationships between scientists, co-producers, commissioners, animals and technologies in natural history film-making. It was particularly open to the political and spatial implications of these practices, which revealed the accumulations and exclusions that natural history film-making created. Actor network theory

also provided another way of considering the role of the researcher in the research process, for it suggests that the power inequalities through which the field is defined emerge through the process of doing research.

I would suggest that actor network theory thus raises important questions over the extent to which 'insider' and 'outsider' categories are still tenable when considering the circulations of meanings and materials of nature in the media. My research suggests that the category of 'insider' is complicated as the BBC is required to be increasingly self-reflexive about its position. Chapter 7 outlines the importance of internal audits at the 'new' BBC, the significance of programme reviews in the media, and the attention given to charter renewals which means that the Natural History Unit has to monitor the nature of its own identity and achievements, and be aware of the threats to them. The increase in managers at the BBC, fulfilling roles other than as programme makers, means that there are positions within the Natural History Unit whose job is specifically to interface between and work to maintain these 'insider' and 'outsider' positions. Conversely, programme-makers are working within the Natural History Unit for increasingly brief periods of time, on short term contracts between work elsewhere. It is no longer possible to identify an uncomplicated 'insider' position.

The position of the 'outsider' is also complicated as the academy and the media are increasingly intertwined. Academics are experiencing similar pressures to the BBC in the need monitor performance and open up their achievements to scrutiny, particularly through the media. The pressure to push research into the public arena is encountered in competition for publishing, the drive for research group recognition and in delivering results from research grants. This obligation to present research is welcomed by media practitioners. As my research suggests, the loss of development time and research expertise within media organisations means they are increasingly dependent on academic sources for stories and material. However, there are also broader questions over whether it is possible to be an 'outsider' when the media are not only inextricably implicated with the practices of academia, but also in the construction of a mediated consciousness. For example, to what extent can I claim to be an 'outsider' when my biography includes a prominent place for wildlife films and David Attenborough?

The problem in distinguishing between 'insider' and 'outsider' positions has implications for the practices of doing research and the analysis of empirical material charting how these differentiations are made and maintained. Throughout this research I found myself occupying complex positions within the networks of media and academy. As an academic researcher doing participant observation, I was in an ambiguous relationship, both 'insider' and 'outsider'. One illustration will suffice. Whilst I was carrying out participant observation on *The Nature Detectives*, I was involved in researching for a PhD, researching for television, and being researched for television. In order to find stories for the programme I returned to my contacts at UCL putting together an idea for a short section of film on fen raft spiders in the Pevensey

wildlife enhancement scheme[51]. At the same time researchers from Fulmar Television were trying to research my PhD for a critical piece on natural history[52]. Simple dual positions are inadequate categories to make sense of this complexity. These divisions between 'insider' and 'outside', between media research and academic research are not pre-existing or self evident, but are created and maintained by institutional practices and resources. As Gillian Rose suggests, constructing situated understandings requires us "to inscribe into our research practices some absences and fallibilities while recognising that the significance of this does not rest entirely in our own hands" (Rose, 1997: 319).

Academics wishing to engage with questions of the role of contemporary communications are no longer able to maintain simple boundaries and categories. I would suggest that this study is pioneering in trying to capture and engage with this shifting domain. It is not currently possible to chart an 'outsider's' view of the relationship between filming technology and mass media broadcasting and changing ways of constructing nature, culture and space. Further studies and a longer perspective will slowly reveal more about the nature of this relationship; but work needs to be done now. Television is a relatively young medium and the pioneers of television can still be found working there. However, this context is now changing rapidly removing the institutional structures and many of the key figures in this history. For example, during this research, Desmond Hawkins, one of the pioneer natural history film-makers, became too ill to interview. It will soon be too late to record this brief period from anything approaching an 'insiders' perspective.

9.3.2. Actor Network Theory and the Politics of Representation

The narratives constructed from this research also reveal some of the ambiguities of balancing 'insider' and 'outsider'. People told me their histories within a work situation, and the narratives I construct reflect a desire to create stories that film-makers themselves can engage with. However, all of the actors which feature in my account of this networks are multi-valent, and embedded in many other networks. These ambivalences can be used to explore the weak points and the tensions within the network, but ultimately my thesis remains the story of a highly successful institution which has created and maintains a stable genre of natural history film-making. Moreover, whilst networks are created through the associations of many actors which are enrolled theoretically, these narratives necessarily exclude the voices of technologies, animals and environments which figure throughout this history. In concluding my application of actor network theory to natural history film-making, I suggest that the issue of reproducing

[51] This brief sequence was transmitted in *Nature Detectives* in the summer of 1995. The research by Clark and Burgess on the use of contingent valuation at this site is published in Clark and Murdoch (1997) and forthcoming in *Environmental Economics*.

[52] The *Without Walls* special *J'accuse Natural History Films* was transmitted on Channel 4 in October 1995, without any contributions from my research. I refused to help with the film, needing to legitimate my position within the Natural History Unit by trying to create an 'insider' position.

only successful networks need not be a problem; for the interest in telling these stories is a function of their power. However, I conclude that the problem of representing a variety of actors in the empirical material is a more serious issue for the radical symmetry which is the aim of actor network theory.

The Natural History Unit emerges within the thesis as 'a centre of calculation' (Latour, 1987) for the production of natural history films. For ease, the narratives that chart this development are organised the four programmes *Look, Life on Earth, Supersense* and *Watch Out*; yet it is the associations that evolve around them that are the focus of the story. The thesis tells of the increasing globalisation and attempts at stabilisation of the networks of the Unit. It introduces new actors at each stage as the Unit seeks new associations through animals, technologies, overseas executives and audience measures. It also highlights the methods of control through which these associations are made stable, or enrolled into the Unit, with the emergence of important roles for cameramen (*Look*), producers (*Life on Earth*), directors (*Supersense*) and managers (*Watch Out*). Through these processes the Unit is able to create globalised representations of nature, and also to manage the tensions that emerge as a consequence of this achievement. The role members of the Unit play at each stage of this process are revealed through interviews, archive documents and participant observation. The historical associations of the network provide constraints and opportunities that individuals negotiate in the processing of doing natural history television and these are retold in the thesis.

However, there are other issues which were not revealed so clearly from the analysis. Throughout the ethical debates there are other voices which struggle to emerge. My analysis captured the public face of the Natural History Unit: interviews took place in the work place, debates were picked up through the press, and people were interviewed in their positions as researchers, producers and series producers. This was despite the tendency of discussions about the interaction with animals during the processes of filming to hint at other positions from which to speak. The very personal pleasures of working with animals occasionally break through the professional presentation, revealing the intense emotional discomfort people now faced when stuck between job insecurity and demands for the shot. The objectivity of zoological science is repeatedly evoked to cope with these issues, and the conversation returns quickly to the utilitarian languages which are so easily incorporated in the analysis of Actor Networks; but the emotional dilemmas remain. As a consequence the multiple identities people hold can be reduced to a monovalent. These other perspectives are not *necessarily* excluded from the processes of constructing actor networks, but the very practical activity of following actors at work as they achieve the efficiencies, power and structures of networks means that the rational is stressed both through theory and practice.

Other positions unexplored in the analysis are also important to the networks of natural history film-making - the voices of the animals themselves. Actor network theory aims to provide a

symmetrical account of the development of systems mixing nature and culture, and these aspirations have been eagerly embraced by cultural geographers as a way of reincorporating nature into their accounts (Demeritt, 1994a, 1994b). However, the search for ways to let the 'subaltern' speak cannot be readily extended to animals as the ultimate 'other'. Within the stories of natural history film-making, there clearly cannot be stories from the animals themselves; only humans can organise reality into the past reflection and future hopes demanded of a narrative structure. However, animals do retain agency within these stories for they can contest them; for example, some Serengeti lions have abandoned their hunting at day for the solitude of the night. Technological innovations are also enmeshed in the circulation of networks, extending the scope of filming over time, space and scale, and the distribution of images through broadcasting channels. Both animals and machines have *agency* as entities within the network, allowing translations of material over space and restricting accessibility to media representation, even enrolling other actors into networks. However, I would suggest that they are not *actors* themselves.

Callon and Latour see these long networks of heterogeneous entities as cause to celebrate the end of the 'Great Divide' between the human and the non-human domains (Callon and Latour, 1991). Latour's latest book (1996) on the guided transportation system in Paris, juxtaposes the many actors involved in the inception of *Aramis*, and ends with a passionate plea from *Aramis* itself on 'its', or perhaps tellingly 'his', needs and desires. *Aramis* can, of course, only speak through the words given it by Latour. This is where the theoretical and methodological literature of actor network theory has been more celebratory than reflexive. Despite the aims of non-hierarchical approaches, the fields in which we research are always constituted through power - the questions we ask, the stories we tell and the actors we incorporate, will always reflect the concerns of the researcher. Other strategies are emerging to locate these actors in positions of agency, such as placing animals at the centre of narratives (Whatmore, 1998), or experimenting with video as a way of presenting research (Wilbert, 1998). These can provide a destabilising perspective on traditional methods of writing up research, but they do not achieve the total symmetry claimed by actor network theory.

I would suggest that despite the failure of actor network theory practically to achieve all its theoretical aims, its efficacy lies in incorporating all actors within one conceptual framework from which power emerges as a relational effect. It therefore deals centrally with ambiguities which remain outside other forms of analysis. Actor network theory can offer another way of working with, and between, the dualities of human and non-human, subject and object, self and other. But its theories and methods should not be idealised. The struggles between researchers, producers and series producers over methods of inscription and enrolment can be heard within the thesis. The social is embedded in the technologies as the associations of natural history film-making and technology can curtail creativity, influence innovation, and prevent access to the network. Animals do react to film-making practices, and environmental change can mean

habitats no longer sustain the blue-chip stories of wilderness. These non-human agents play an important part in the achievements of natural history film-making. However, animals and technologies remain boundary objects within many worlds, within the discourses of cultural geography as much as within the programmes of natural history film-making. I would conclude that these will remain unequal relationships, but they are not necessarily ones that have to involve subjugation. It is by looking at the processes of translation through which natural history films are achieved, as well as the processes of purification that result, that attempts can be made to include these actors.

9.4. The Stories of Natural History Film-Making

In this section I want to return to the achievements of the Natural History Unit. The thesis has told of the development of the Natural History Unit as 'a centre of calculation', with its ability to create new nature/culture hybrids and extend these representations of nature over space though fixing others distant in time and space. The stories emerge from within the Natural History Unit, as film-makers, producers and managers negotiate their relationships to heterogeneous actors, such as animals, environments, technologies and audience figures, through which networks are constructed. By recounting the weak points of this networks as well as the strong associations, the thesis has suggested that achievements are not inevitable, nor are they uncontestable.

Firstly, I summarise the ability of the Unit to manage their networks and accumulate resources, pointing out some of the ways that this purification differs from other media forms. Secondly, I explore the translations through which the NHU is able to act at a distance, identifying spaces that are incorporated into these networks, and drawing attention to those that are excluded. These stories of social and spatial processes have clear contributions to make to understanding the geographies of scientific and popular knowledge. However, I want to suggest that the networks through which the sites of natural history film-making are created are simultaneously social, technical and spatial. Network analysis is simultaneously spatial analysis; the social and technical networks of natural history film-making reconfigure the spaces through which they connect and circulate. One process cannot be extracted as an explanatory factor. This section thus draws out the potential of my research to develop understanding of the geographies of flows through which nature is reconfigured. It reflects on how these networks construct other categories, creating the difference between nature and culture, expert and lay, global and local, and maintaining particular views of science, the media and environment. Finally, having summarised the achievements of the Natural History Unit and opened up the geographies of these knowledges, I suggest ways that film-makers and academics could intervene into these networks to achieve more equitable knowledge relations.

9.4.1. Purification and the Achievements of the Natural History Unit

The success of the Natural History Unit concentrates power and wealth at certain nodes of the global networks of natural history film-making, whilst simultaneously excluding others. The most obvious point of concentration is the Natural History Unit itself, chosen as the focus for this study precisely because of its position and longevity. In the developments of the Natural History Unit in Bristol, it is possible to chart the emergence of a defined centre for wildlife film-making that now includes the independent companies *Green Umbrella*, *Scorer Associates*, *Global Production Ltd*, *Zebra Films*, *Chris Parsons Productions Ltd*; the graphics company *4:2:2 videographics*; and the millennium projects at *Wildscreen World*. The developments in Bristol have been accompanied by the establishment of a global wildlife film-making community which meets each year at festivals and symposia; the growth of co-productions supporting and influencing production overseas; the maintenance of stations for the research and filming of animals; and the broadcast of natural history programmes to television sets throughout the world. However, despite the scope of these networks, resources are concentrated in the Natural History Unit in Bristol.

The inequality of these movements over space emerge because the Natural History Unit is able to colonise and control the worlds of others. Through the management of its networks, the Natural History Unit has been able inscribe animals and environments dispersed across space and concentrate resources such as archive film, copyright ownership and definitions of quality within the Unit. Some measure of this accumulation can be gained from the announcement in 1996 of a 500 million dollar joint venture between the BBC and Discovery Communications (*Television Business International* Editorial, October 1996: 3). In this deal, the two broadcasting companies pool programme production, broadcasting resources and libraries. The BBC can then 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 particularly the library. This unprecedented access enables Discovery to exploit series like *Life on Earth* and *Life in the Freezer*. Bearing in mind that most of the $500 million dollars comes from Discovery Communications the value of the library at the BBC can begin to be estimated.

The thesis recognises this power-house of the Natural History Unit as a network itself; a fragile achievements of actors in relations, fraught with daily conflict. The efficacy of the network depends on a host of diffuse alignments of practices and properties, not just the potency of their images. There is however an amazing endurance in the genre of natural history film-making through which these networks are achieved. The history of the Natural History Unit has spanned a great diversity of wildlife programmes from the 1950s to the 1990s. There have been television lectures, animal dramas, live broadcasts, studio programmes, children's programmes, quizzes, countryside features and environmental new programmes. But again and again, the

core identity of the Unit is articulated around blue-chip natural history film-making seen in the mini series, mega series and permanent strands like *The Natural World* and *Wildlife on One*.

Blue Chip films form points around which the associations of natural history film-making are stabilised, and the competing claims of actors in the network are reflected in them. My research has indicated how this genre has emerged as a pivotal point of association between naturalists, producers, co-producers, commissioners and audiences over the last forty years. However, Natural history programmes also repeatedly reproduce the assumptions of powerful actors involved in the network. The work of Barbara Crowther has indicated how images of nature presented in blue-chip natural history films are powerful vehicles for the communication of specific forms of gender relations, which she attributes to the patriarchal ideologies of behavioural ethology and the media (Crowther, 1995, 1997). Further work on these textual iconographies has the potential to offer insights into changing representational strategies which feature animals; for example, on the relationship between animals and their habitats (Blum, 1992), animals and empire (MacKenzie, 1988), animals and rural ideology (Matless, 1996), and animals and popular culture (Baker, 1993). However, the argument in this thesis is less concerned with how individual texts communicate meanings, than with the development and implications of a whole genre which has successfully colonised space for the popular presentations of animals on television. As I argued at the end of Chapter 2 and demonstrated in the empirical chapters this genre involves a contract between producers, texts and consumers, all situated within the institutional contexts of television. The emphasis on auteurs and isolated readers which underpin iconographic analysis is less applicable to the flows and contexts of television. I would argue it is precisely by developing these 'ground level' theories that it is possible to draw attention to how the achievements of television are actually different from other textual forms.

The images of natural history television differ from images of nature in paintings, still photographs and the press for a number of reasons (for examples of the latter see Cosgrove and Daniels, 1988; Lutz and Collins, 1993). Television contains more potential for conflict *prior* to the appearance of images in texts. The broadcast system, with its constant demand for material and its dispersed and non-committed audience, differs markedly from, for example, the periodic production of subscription-based magazines. The costs and the risks of television are high, and attempts to claim and control these risks dominate television to extent not evident in magazine production. Lutz and Collins' account of the production of National Geographic presents a professional situation not experienced in television since the 1960s. They write of a medium where it is still feasible to fund individual journalists travelling overseas with broad remits on what to photograph and then reconstruct the story back at the magazine (Lutz and Collins, 1993). Compared to the Natural History Unit this has more in common with producer driven initiatives behind *World About Us* in the 1960s or 1970s (Chapter 5), than with the directors

and managers involved in the production of *Supersense* and *Watch Out* in the 1980s and 1990s (Chapters 6 and 7).

Moreover, the products of television are inherently ephemeral. This has implications for the subject choices, textual strategies and advertising tie-ins of natural history television, aiming to attract attention in an increasingly competitive marketplace not only for audiences, but also for co-productions and commission. The ephemeral nature of television also effects the Natural History Unit's ability to repackage and re-circulate material to control and accumulate more value from it. The increasingly competitive, multi-media environment in which television now operates has already begun to extend to the magazine industry. Natural history on television and images of nature in magazines share very different histories, yet I would speculate that they are rapidly converging and look set to share many similar problems and communication strategies in the future. There still remains much work to do on *how* the textual strategies of these different media forms communicate, but this is beyond the scope of this thesis. However, I would suggest that the sensitivity to action-in-context of actor network theory means it is valuable for uncovering the differences in media contexts, and providing a way of theorising *why* this shift is occurring.

An analysis of action-in-context also provides some indication of why and in what ways the trajectory of natural history films differs from the experiences of other documentary forms. 'Actuality' television has seen intensive development recently, presenting the viewer with new formats and modes of access to the 'real', including the reconstructed real (Corner, 1995). These changes have involved the near disappearance of investigative documentaries, a rise in video diaries and 'fly on the wall' documentaries, and the development of successful genre of 'self conscious' dramatic reconstructions. The processes of natural history film-making have been involved in all these shifts, but their experiences are different. Natural history film-makers have lost the ability to investigate new animal behaviour, as they increasingly rely on scientist to provide access to stories and animals, whilst developing specialised visual technologies for capturing animal behaviour. In their early films, natural history film-makers have followed the traditional documentarist's search for ways of minimising technological intervention in inscribing reality. However, more recently they have been able to follow practices of increasing intervention and reconstruction, whilst still claiming traditional documentary actuality. In this way, they remain one of the few apparently 'serious' documentary programmes aired on television at peak times. They are able to claim the educational value of their output through their associations with naturalism and science, yet maximise their visual appeal for domestic and overseas audiences through technological and interventionist innovations in image quality. These purifications are important achievements for the continuation of natural history film-making.

9.4.2. Translation and the Networks of Natural History Film-Making

In this sub-section I want to return to the networks of natural history film-making. Firstly, exploring how a focus upon the point of inscription reveals natural history films as a form of situated knowledge; and secondly, looking at how their associations and processes of enrolment contribute to the flows of materials and meanings of nature. From the scientific methods of inscription used by early ethologists, through to the dramatic reconstructions of *Supersense* there are complex and contested sets of actors involved in inscribing animals. The thesis has drawn out some of these competing claims over how animals are inscribed, the way that natural animal behaviour is witnessed, and the narratives in which these images are embedded. Chapter 4 illustrated the early initiatives to capture nature without human contact, carried out by 'real' people with 'real' animals; the technical skills and naturalist knowledge of the film-maker 'achieving the power of death over the subject, but without exercising it'. Even here however, there were indications of the increasing need to exercise power in the demands of the first producers at the Natural History Unit for film-makers who were 'making' films about animals rather than 'taking' them. The developments of *Life on Earth* outlined in Chapter 5 were enabled by division of these skills between professional cameramen and professional scientists, able to access animals through research sites across the globe. *Supersense* extended this control over through directing skills of film-makers (Chapter 6), then further incorporated in multiplying media genres (Chapter 7). The 'power of death over the subject' is now not only achieved, but also sometimes exercised, although this control becomes increasingly controversial and contested in the negotiations over who is entitled to speak for what is 'natural' seen in Chapters 6 and 7. The story from the point of inscription is one of increasing control over animals, often justified through science, whilst the narratives in which these are positioned move further towards entertainment.

The processes of enrolment focus upon the links involved in the production, validation and dissemination of these representations of nature. Through these associations the networks of natural history film-making are able to both speak for entities distant in time and space and also to fix these within a strategic centre. The technologies of film-making and broadcasting have been key to these movements over space. Filming developments have expanded the geographical extent to which animals can be inscribed; other technological developments like travel have aided the movement between these places. The globalisation of broadcasting has multiplied the spaces to which images are disseminated. The thesis has traced the globalisation of the networks of natural history film-making, as sites of inscription and transmission expand over space. Chapter 5 of the thesis explored the globalisation of natural history film-making through the developments of the *World About Us* and *Life on Earth*, and this maintenance of this global position forms the context for the debates in the remaining empirical chapters.

However, I suggested that these global developments did not constitute surfaces, but were extended through lines connected through specific sites. These sites included scientific

research stations where access to animals' behaviour could be predicted and also the spaces of the international market, concentrated in the United States, Europe and Australia. The absences from these networks were evident in debates over what constitutes an 'international' animal and the difficulties with presenting 'local' wildlife seen in Chapter 5. The global networks of natural history film-making also influence the absences within the films themselves, for the copyright and restrictions of the global market value a nature without people. Natural history film-makers tend to return again and again to the same places, filming the same animals for the same audiences, creating stable images of nature, and simultaneously stabilising social relations at these sites.

There is, therefore, a straightforward geography of natural history film-making which can be constructed using actor network theory. The sites of natural history film-making have been those sites where film-makers could approach animals through the aid of zoos, natural history reserves, and latterly scientific research stations. The geographical scope of these sites has expanded from the first experiments in Europe and colonial centres in East Africa. Technological developments in film stock have enabled film-making at lower light levels, opening up new subjects such as British mammals or tropic rain forests[53]. Technological developments in camera design have enabled film-making in environmental extremes, opening up new areas such as humid tropical environments, the dry atmosphere of deserts, the extreme cold of the Arctic and Antarctic, and of course, enabling underwater footage[54]. Political changes have also periodically opened up and closed down geographical areas accessible for wildlife film-makers, and the Natural History Unit has been quick to capitalise the opportunity for new stories from Russia and Eastern Europe[55]. However, this shifting geographical scope of natural history films has also been a consequence of growing familiarity with the locations of natural history from other media forms such as the news, environmental issues and travel. These other representations make the wilderness stories of natural history films difficult to sustain, and their political neutral programmes difficult to produce[56]. This geographical expansion is increasingly being replaced by attempts to extend the boundaries of the visual field

[53]For example, when Heinz Sielmann made his first film in the Congo in 1960, large numbers of trees had to be felled to allow in suitable light levels for filming. It was not until the 1970s that film stock was sensitive enough to easily film this footage. Further avenues where opened up with the introduction of video in the 1980s, which needs even less light and could be used underwater and with very light consumptive lenses, such as straightscopes (see the filmography for further details of the first films featuring these developments).

[54]The first footage from underwater was shown in 1956; the Antarctic film showing Emperor Penguins was transmitted in 1958; the first macro photography in 1961. Developments in camera technology have focused upon, firstly, developing smaller more portable equipment for filming, and latterly, on developing more possibilities for transmission, such as IMAX cameras.

[55]An example of these developments include the *Realms of the Russian Bear* transmitted in 1992 after the break up of the Soviet Union.

[56]For example, the Natural History Unit had problems with its special on mountain gorillas whose transmission was delayed following the civil war in Rwanda. The most recent blue-chip series on *Life in the Freezer* (Antarctica) and *Private Life of Plants* (on plant species) also reflect this tension in searching for the last wildernesses on earth and using time lapse photography to animate the new arena of the plant kingdom.

through alterations in time, size and scale, or to push the boundaries of the genre itself. These challenges remind us that actors are never monovalent and the animals, environments and sites of natural history film-making themselves do not occupy only one network.

The geographical extent of the audiences for these films have also shifted. My research has not looked at audiences per se, but attempts to capture an audience dispersed in time and space, and make it visible within the production context, form part of the networks of natural history film-making. From this perspective the thesis explores how audience figures, expressed in millions, have traced the expansion of the audience from small parts of the South East of England, to throughout England. Appreciation indices have attempted to capture the values of this changing audience, particularly with the introduction of competition from ITV. Chapter 8 demonstrates how recent discussions of the audience try and incorporate a global audience through a concentration on audience share, the income from overseas sales, and co-production production arrangements. The audience provides the Natural History Unit's constant sense of uncertainty underpinning the relentless drive for scarce audience attention, and increasing circulation through the networks.

By focusing upon the changing nature of the links between these sites, it is also possible to reconstruct a more complex geography of natural history film-making. These networks create systems of variable geometry (Castells, 1996: 1) around the flows and control of knowledges about nature. Through these shifts new communications geographies are created which bring into being sites of accumulation and exclusions, concentrating knowledge and distributing responsibility. These geographies disrupt the configuration of the world as a single grid-like surface, recovering instead a history and a geography of flows (Thrift, 1995; Whatmore and Thorne, 1997). This means that an abstract notion of space cannot be extracted from these new geographies of information. As Murdoch suggests, "space is bound into networks and any assessment of spatial qualities is simultaneously an assessment of network relations. Actor network theory insists therefore that spatial analysis is also network analysis" (Murdoch, 1997: 332). There can be no purely spatial processes as spatial relations and characteristics emerge when non-human resources facilitate action at a distance. The social and spatial processes of natural history film-making have involved processes to expand flows over space, concerns to restrict flows through space, sites of inclusion and exclusions, and technological innovations to increase the circulation of meanings and materials through space.

The first half of the story outlines the efforts to increase the scope and range of the flows of natural history film-making through informal networks. The networks of natural history film-making involve the movement of material - finance, film, film crews, filming technology, and sometimes animals; and they are also transfers of information - on ideas for film, types of animal behaviour, animal location, audience measures, and environmental issues. These flows were facilitated by various factors such as the opening up of travel opportunities, the

development of more portable technology, the growth in scientific research sites, the departmental status of the NHU, new finance deals, audience measures, and the networks of television executives and producers. The story in Chapter 4 and Chapter 5 in the thesis, until the late 1970s, is broadly one of how the first networks of natural history film-making were able to maximise these flows, culminating in the pivotal story of *Life on Earth* in 1979.

However, the second part of the story in Chapters 6 and 7 is more to do with the ability of the NHU to police and restrict these flows, and respond to the restrictions from those with whom they worked. Rather than maximising the flows of material and knowledge across space, the second half of the story is concerned with the ability of the Unit to control these flows. Chapter 6 explored the use of directors to manage animal behaviour and increase the impact of their images. Chapter 7 demonstrated conflicts in the press over attempts to use other media as means to control flows of information about their product to the public. Conflicts over copyright occur as the Natural History Unit seeks to extend ownership over new forms and new areas. For example, copyright definitions have changed from the level of programme, to sequence and now, with the advent of multi media, to individual images. The holders of copyright were originally camera operators, now the BBC is keen to control copyright to all its commissioned material; in all forms from broadcast, video, multi-media to theatre; and across all territories. Meanwhile, other parts of the network are also seeking more control over their involvement. Arrangements with scientists are no longer informal agreements, but increasing involve the negotiation of contracts over filming fees and the re-use of footage.

The management of these flows of natural history film-making create sites of wealth, but also points of exclusion. As Castells suggest these "global networks of wealth and power connect nodal points and valued individuals throughout the planet, while disconnecting and excluding large segments of societies, regions and even entire countries" (Castells, 1996: 25). For example, the strong associations between natural history film-making, scientific stations and nature reserves has been achieved through over forty years of association between film-makers and research scientists to the mutual benefit of both. These associations have emerged from the related practices of animal observation, their mutuality of funding[57], and a shared vision of wilderness. In the nature reserves of East, West and Southern Africa, which are the backdrop to many wildlife dramas, the wilderness images of wildlife films and the research practices of biologists underpin specific management practices which involve exclusions. As Whatmore suggests "ignorant of their ephemeral status as representations such imagined spaces all too readily become flesh as heterogeneous communities are purified in their name through the sometimes violent removal of people, animals and plants who find themselves on the wrong side of the wire" (Whatmore, forthcoming: 18). Those people who are excluded from the networks of scientists and film-makers and yet still inhabit these spaces, are given no role.

[57] For example, National Geographic funded Jane Goodall's filming at Gombe in exchange for rights to the footage.

Their only available strategies are to exclude the excluders (Castells, 1996: 25). This is forcefully demonstrated in the emergence of animals habituated by western scientists and film-makers as the targets of attack in Africa; most famously when the gorillas befriended by Diane Fossey and filmed for *Life on Earth* were slaughtered shortly after the programme was broadcast.

The NHU meanwhile continues to try and maximise accumulation from these flows through increasing their circulation. As the geographical expansion of natural history film-making appears to reach its limits, the NHU has to concentrate on speeding up these spatial dynamics. Rather than being archived, the images in natural history films are now increasingly recycled in new forms such as multi-media and cable channels, new arenas like advertising and new ventures as in the IMAX screen and electronic zoo planned for the dockside development in Bristol. The images of animals in Natural history films have several characteristics that enable them to be re-used in this way. They can, of course, be replicated away from the source of filming. With the advent of digital technology they can now be used successively without diminution of the original. They can be readily circulated, transformed and stored in the new networks of the media. By creating disembodied flows of information the representations of animals in natural history films have characteristics which mean they differ from previous forms of animal collecting seen in zoos (Anderson, 1995). Through the processes of inscription and enrolment the Natural History Unit is able to accumulate resources from these images of animals; yet because of the purification of these image they are simultaneously able to exclude a range of ethical issues and environmental concerns around this use.

9.4.3. Hybrid Forms and Emerging Categories

The networks of the Natural History Unit not only shape and create their own geographies, I also want to suggest that they define and maintain their own categories. From the stories in the empirical material it is possible to extract a particular view of science, environmentalism and broadcasting which are shared, but also contested, by the members of the Unit. The Natural History Unit has continually privileged scientific methods of representing animals and mechanistic interpretations of animal behaviour. Moreover, the scientific vision recounted inside the NHU has remained remarkably constant. In Chapter 4 I explored the efforts of early naturalists and film-makers to find a new space to articulate a particular scientific and moral vision of natural history. This was a view which synthesised early animal ethology, post-war values of nature, and Reithian broadcasting; and it is a view that largely still endures as natural history film-making becomes the last place to practice natural history. Subsequently, natural history film-makers have drawn repeatedly upon a particular rhetoric of science as a corpus of uncontested facts about animal behaviour, and they have drawn repeatedly on selected field zoologists as their sources of stories and animals. However, as the press comments in Chapter 7 demonstrate this definition of science is now far removed the changes in the practices,

methods, and objects of study within contemporary biology, zoology and ecology, despite the proclaimed educational and popularising objective of the Natural History Unit. Thus, as the authority and legitimacy of natural history film-making is challenged their claims to a particular form of science actually becomes increasing central to their claims of integrity. As Wynne suggests the "work to define boundaries between the expert and the lay as if these were objective categories given in nature becomes critical to the stabilisation of forms of authority" (Wynne, 1996: 75). In order to maintain the authority of the Natural History Unit, nature is actively removed from the realms of everyday experiences, and the authority of both science and the media are reinforced through films which obscure their own construction.

Similarly, stories of natural history film-making construct a very particular view of environmental issues and problems. Environmental issues weave briefly through the story of natural history film-making from the perspective of the Natural History Unit, appearing mainly in Chapter 6 as the Unit struggles to capitalise on contemporary environmental concerns. For the most part though this a story of failures and of absences; the inability to create a reputation for the NHU for innovative environmental reporting; the loss of senior members of staff to pursue conservation programmes on their own; and the dispersal of responsibility to make environmental programmes. However, I would suggest that this is in part due to the discourses of environmentalism which dominate the Natural History Unit. The Unit tends to restrict environmental issues to habitat and species loss, and these are framed in terms of the loss of aesthetic resource and animal spectacles. The practices of natural history film-making focus attention on particular environmental problems such as the encroachment of urban development into nature reserves; sound pollution in rural areas; the reduction of large herds of wildlife such as elephants and wildebeest; and the loss of habituated, and thus easily filmed animals, through poaching. The way these problems are constructed restricts dialogue with conservation agendas on biodiversity or sustainability, with their emphasis on a broad spectrum of species and on the relationship between society and environment. Moreover, the Unit is also creating problems for itself as its definitions of programme quality and environmental issues conflict - it is difficult to make an visually appealing environmental programme, when environmental problems are framed in terms of the loss of this aesthetic resource.

Finally, the stories of natural history film-making in the thesis present a powerful account of the changing nature of television broadcasting. The value of this forty year history over a more straight forward production ethnography resides in its ability to trace how this context has shifted. The last forty years have witnessed huge changes in the aims, institutions and technologies of television broadcasting. The empirical chapters of the thesis provide a document of how these changes have influenced attitudes to programme production, filming techniques and editorial processes within one part of the BBC. Chapter 4 outlines the unparalleled opportunities available for a select group of people to forge their own vision of natural history broadcasting in the 1950s. In the affluence and confidence of 1960s and 1970s

this vision of natural history film-making is used to create a document of the largely uncontested ability of film-makers from the BBC to create and distribute the first global natural history programme; the achievements of *Life on Earth* perhaps represent the final natural and cultural achievements of a British Imperial vision. This broadcasting context has since changed dramatically and, whilst Chapters 6 and 7 demonstrate the ability of the Natural History Unit to react to new challenges, these achievements look unlikely to be matched again.

Over the period documented by the thesis, broadcasting of natural history films has changed from a means to an end, to an end in itself. The context of these broadcasts have shifted from educating within a national arena, to performing within an international television market. Some of these changes reinforce a sense that we are now witnessing a new era in broadcasting. However, there are also continuities as each circulation through the networks of natural history film-making internalises previous associations. The production values expressed by early film-makers with their desire to emulate the visions of early ethologists, have become 'black-boxed' as abiding definitions of quality in blue-chip natural history film-making. The locations where these qualities can be achieved and the stories through which they are told remain remarkably fixed. The past is not surpassed, but revisited and reshuffled, reaffirming the cultural separation of nature and culture, the accumulations of the Natural History Unit and the exclusions from these networks.

9.4.3. The Politics and Pleasures of Natural History Film-making

Finally, although the effects of the networks of natural history film-making are powerful, their associations are always uncertain achievements. The ability of the network to disperse responsibility and the seamless accounts of the academics who chart this process have been the basis of criticisms of actor network theory. To return to questions raised in the methodology, Singleton suggests that analyses of actor networks: "say nothing about what things should be like [...] We are left with no political voice, no place from which to stand" (Singleton, 1993: 17). I want to suggest however, that rather than being left with no place to stand, actor network theory actually allows us to recover numerous places from which to stand, and moreover, highlights places from which to suggest interventions. As Murdoch counters, change is better effected from within and that "once we understand how size and power are manufactured then we can understand how they can be transformed. But we will only fully recognize the potential for change if we stay within the networks" (Murdoch, 1997: 335).

Through considering knowledge as an on-going process of construction and maintenance which links many actors in many places, actor network theory has the potential to open up complex geographies of knowledge. Whereas textual analyses offer scope for identifying particular points of power involved in the construction of representations, they nevertheless tend to close down discussion over how it is possible to construct an alternative political position other than

by altering the texts themselves. Such critiques are often seen as untenable or unwelcome by those actually involved in media production. However, by viewing natural history film-making as on-going processes of knowledge production, a different politics of representation can be achieved. The importance of the genre of blue-chip films for supporting audience ratings, the BBC Charter and overseas sales suggests that changes to film content will be slow and contested. By opening up many points in the geographies of natural history film-making, I suggest actor network theory can introduce a politics which is able to work 'with the fetish' (Cook and Crang, 1996) by not condemning the texts or audiences of natural history films, but by suggesting strategies for the distribution of surpluses along all points in the network for more equitable knowledge relations.

Each extension of the network over space involves an active processes of the production and consumption of knowledges about nature. Network analysis draws attention to the fact that the movement away from the original sites of knowledge production involves a series of points where the production and consumption of knowledge is on-going. Production and consumption are not separated in time and space. At each stage, scientific expertise and media representations can be consumed or not consumed, resisted or modified and translations made more stable or more ambiguous. Chapter 8 sketched out the beginnings of these processes within the editorial practices of the Natural History Unit. Here, the dynamics of the decision making process within the Unit reveals the contingencies and uncertainties over the future of natural history film-making more than the stabilities. Each subsequent translation through which the network is extended will itself involve a point at which knowledge about nature is both produced and consumed. Attention to these multiple sites replaces the demonised and totalising processes of 'empire', 'science' and the 'media' with a more complex web of negotiations, more points to intervene and more sites to recover the pleasures as well as to understand the politics of natural history film-making. These processes involve many different meanings and values given to knowledges about nature. The historical trajectory of the thesis has indicated just some of the ways that these processes can shift, as power becomes concentrated in different parts of the network and responsibility dispersed. Power is still shifting, and in drawing the thesis to a close I want to indicate other areas where I feel that interventions can be made to achieve more equitable knowledge relations.

Firstly, there are moves by National Parks to secure some of the income which film-makers are able to derive from footage of their wildlife. For example, the filming licenses in national parks can now reach up to 1000 dollars a day. Scientists are increasingly demanding some form of control over copyright and sequence construction. Other places may follow the example of Bhutan and attempt to retain the value of natural history film-making in their country by embargoing repeat footage. Colin Willock (Head of *Survival* Films) in his reflection on the developments of natural history film-making since *Life on Earth*, suggests that contemporary film-makers see these legitimate demands as being held to 'ransom'. Instead, I would argue

they can be used as positive points at which it may be possible to contribute to a more equitable distribution of the power and wealth of natural history film-making. There are many ways in which the value of experience, expertise, images, archives and sales accrued through natural history film-making may be distributed more fairly.

Similarly, Stephen Mills (1997), himself a wildlife film-maker constructs the perennial tension of natural history film-makers in the following way, suggesting that: "he makes his living out of nature; nature is disappearing. If he says too much about that, he loses his audience. If he does not he loses his subject". What Mills does is to construct a direct relationship between the animals and the audiences, relinquishing responsibility at all the other points along the network to focus upon the responsibility of the audience to react to the intermediary forms of natural history. However, this thesis has demonstrated the diverse actors and entities involved in natural history film-making. Natural history film-makers are not the only ones who are making their living out of nature, and wildlife films alone cannot save species. But they can play a part in accepting the responsibilities that comes with their position of power within these networks by redistributing surpluses to those people who can. The very fact that there are absences is itself a potential opportunity. The work of *Television Trust for the Environment* for example has been innovative in trying to incorporate 'southern' film-makers and markets into global markets, through the dissemination of film-making skills and production expertise. This offers opportunities for film-makers, all over the world, to offer their narratives on their local wildlife. The BBC could similarly contribute through using local film-makers and incorporating other people's visions into their programmes.

Thirdly, the BBC has committed itself to 'adding value' as a justification for the continuation of its license fee while its audience share will necessarily drop as a result of increased choice and competition. The dominance of performance indicators at the BBC means that ‘added value’ is now defined as the additional income the BBC attracts through co-production and overseas sales, incorporating many more people into the network. However, there are still indications that there are other values that the BBC and the film-makers themselves wish to see represented in natural history films. These suggest that whilst the Unit may be incorporating larger audiences through blue-chip film-making, it is not always connecting with them. The directorate on British natural history film-making which ushered in *Watch Out* and *Nature Detectives* demonstrates the appreciation of meanings of nature other than the ones extracted from a global film-market. As Harrison suggests people benefit "spiritually, emotionally, intellectually, physically and socially when nature is accessible" (Harrison, 1993: 48). The experiences that people gain through having nature accessible to them, to which television can contribute, can be valued in various ways not many of which will be picked up through dehumanising audience statistics or crudely-interpreted qualitative research. The expanding networks of blue-chip natural history films may present an image of nature to increasing audiences, but with their attempts to mirror the modest witnesses of science this is not usually

an image that people can see themselves within. If the BBC wishes to continue with its public service broadcasting charter and continues to cite the NHU as one of its main contributions to a public service broadcasting ethos, then I would suggest it has to explore how other values of nature are defined.

The stories from forty years of natural history film-making have illustrated the opening up of the Natural History Unit from the first tight social networks of the 1950s, to the 170 or so men and women, from television, conservation, naturalist and administrative backgrounds. The changing media environment has increased choices from the scant offerings of nature in popular culture in the post war period, to a proliferation of programmes, magazines, books and on-line sites where people can learn about nature. The development of new technologies has expanded the visual scope of the biological world, providing the professional images which have fed the development of natural history film-making, and more recently provided a popular past time for amateur animal watchers. The growth of a wildlife film market, which started in Britain and the United States, is slowly incorporating more countries enabling them to realise the value of their indigenous wildlife. Support for animals whose futures are endangered has accompanied the growth of wildlife film audiences, though a causal relationship is impossible to prove. The complex spirals of natural history film-making can continue accelerating inwards, aiming to impact upon audiences through ever more dramatic visual images, further constraining the entities of which the network is constructed; or they can begin to spiral outward to connect and build on the fragile sense of connection that is evident at each point along the network, to open up and envisage more social ways of interacting with nature. I want to suggest that each site where entities are enrolled can be opened up and examined as points in which to intervene.

The exclusions and inequalities of natural history film-making are not inevitable. Through their purification of the boundaries between nature and culture, expert and lay, global and local, the knowledges of natural history film-making currently concentrate material value within the Natural History Unit and cultural authority to scientific knowledges. However, in following Latour I suggested at the outset of the thesis *We have never been modern*, and I want to end by suggesting that the purifications of natural history film-making have never really been achieved. Despite the narratives of exclusion, the increasing ordering of nature and the rationality of performance indicators, this is a community composed of actors who are not monovalent, but are part of the many worlds of science, television and natural history. Through retelling their history, by showing how it could be otherwise, and by opening up the contested processes of doing natural history, I hope that now, more than ever, the productiveness of this diversity can be appreciated. My research has focused on the achievements of the Natural History Unit, but the many points in the networks of natural history film-making provide the opportunity to increase the ways that we reimagine nature both as fiction and as fact in ways that "contribute

deeper equality, keener appreciation of heterogeneous multiplicity and stronger accountability for liveable worlds" (Haraway, quoted in Haraway and Harvey, 1995: 507).

9.5. Developing the 'Networks of Nature'

To conclude I have found actor network theory a valuable approach which acts as a 'meeting point' between different theoretical positions, and also between theory and empirical observation. In this last section of the thesis I want to use the conceptual insights I have developed to speculate on further work where this approach may be useful. Firstly, I would suggest that actor network theory can be used to develop the interface between science studies and media studies, to enrich questions within both disciplines, and to move technology and communication to the centre of accounts of the contemporary world. As Dorothy Nelkin suggests, the media and science are both linked through their desire to gain "control over the information and images, the values and views, the signs and symbols conveyed to the public" (Nelkin, 1995:13). By focusing upon the relationships between these worlds, and their desire to gain control over flows of information and material, actor network theory provides one point from which to understand how representations in both the media and science maintain power and authority through this control, and highlights the claims of technologies, copyright agreements, media and scientific institutions to reconfigure contemporary geographies.

As I outlined at the end of Chapter 2, some specific connections between science and media studies are being made (Winston, 1993; Potter and Wetherall, 1994); but from the conceptual insights in the thesis I would suggest there are also broader ones. Media studies are struggling theoretically to embrace contemporary changes in broadcasting systems, communications technologies and programme form. This is particularly the case for television where debates over the ideological status of television within the nation state appear increasingly partial. The privileging of text over context in much media studies have neglected questions over television's broader institutional context, transitory form and consumption practices. However, Corner identities a recent "move of ideas which more firmly engage with substantive factors [of economy, society and culture], have a more precise perception of inter-relations complexity and carry a stronger sense of their own theoretical positioning and its possible limitations and foreshortenings" (Corner, 1997: 260). Corner suggest this shift is a consequence of a broadening engagement between theory and empirical material in television studies. I would suggest that actor network theory could facilitate new questions at this interface for television production. The centrality of space in network analysis suggests potential for exploring further the relationship between communication networks and space, explaining how contemporary communications reconfigure space without crude determinisms. The openness to networks composed of heterogeneous associations in actor network theory provides an alternative way of rethinking the status of the referent and the question of media effects through revealing the particularised orderings that the creation and extension of media forms requires. Finally, the

reluctance of actor network theory to accept *a priori* categories asks broader questions not only about how media practitioners represent their subjects, but also how they know them. These grounded questions reveal the differences between areas of science and distinctive media forms. They are also broader points from which to address the control of information as an increasingly important site of conflict in society.

Mediation has always formed a central tenet of actor network analysis, however the contribution of different media forms to the extending the networks of science are usually overlooked in science studies (see for example Latour, 1993). My study opens up these questions by looking at the movement of science outside the laboratory, through a media institution which transforms as well as conveys scientific understandings. Traditional models of the popularisation of science are problematised through its attention to the epistemological, ontological and geographical links between science and the media. I would suggest there is further work to be done on the institutional and disciplinary practices through which expert and lay knowledges become differentiated. However, I have also questioned the claims of Latour that science gains in certainty away from the laboratory as distance is created from contingencies at the place of creation (Latour, 1987). This thesis provides one point from which to begin to explore the changing dynamics between the long networks of science and the media. By doing so, the thesis addresses the criticism often levelled at actor network theory, that it necessarily re-narrates a story of successful network building. I have focused on conflict as a central part of competing networks, and the research begins to open up the multiple identities which people, animals and environments occupy within these networks. More work on the many sites outside of the laboratory which enable the movement of science over space will refine the theoretical claims of actor network theory and provide empirical material on the contested processes through which scientific knowledge is simultaneously consumed and (re)produced.

The thesis also contributes to the developing conversations between science studies and geography, and this is where I see the thesis as being centrally placed. I am not, of course, the only geographer to have embraced the insights of science studies over the last four years. Indeed as Thrift et al assert: “if it were necessary to choose the most vibrant and exciting areas of research in the social sciences and humanities today, then surely the study of science as a social construction would figure large” (Thrift, David and Livingstone, 1995: 1). Within geography, a significant number of academics within the fields of economic, cultural and feminist geography have adopted an approach to understanding the construction of knowledge that moves beyond these categories, focusing instead on a geography of flows of information which are increasingly the key to understanding geographical issues (Thrift, 1996; Murdoch, 1995; Whatmore, 1997). The number of studies using actor network theory has increased exponentially over the period of 1993 to 1998 (Bingham, 1996; Demeritt, 1996; Hinchliffe, 1996; Murdoch and Clark, 1996; Whatmore and Thorne, 1997). Although some may be justly

criticised for being overly theoretical and isolated by their vocabularies from the rest of geography, this conversation is now beginning to mature around the relationship between knowledges of nature (Murdoch and Clark, 1996), the practices of science (Demeritt, 1996a), and new actors such as technology and animals (Bingham, 1996; Hinchliffe, 1996; Wilbert, 1998). This new way of thinking is particularly applicable to those subjects which are currently on the boundaries of 'human' geography. Their very novelty which cannot be easily assimilated into conventional disciplinary accounts, means they powerfully reveal further questions and the potential for new ways of thinking about materiality within cultural geography.

Actor Network theory clearly has insights to offer geographers, for an understanding of science, expertise and authority is increasingly important in addressing the configurations of 'place and space', 'nature and landscape' which have formed central theoretical conversations in geography (see for example, Harvey, 1996, Lash, Szerszynki and Wynne, 1996). However, geographers also have much to contribute to some of the more overarching claims of actor network theory. The recent attention to capturing complex identities and understanding non-linear spaces offer a subtly that is missing from much of the empirical material accompanying actor network theory (Whatmore, 1997). The attention of geographers to sites of production and consumption of science outside the laboratory provide particularly valuable empirical insights and theoretical challenges to conceptions of actor network theory in science studies (Murdoch and Clark, 1996). Geographer's established expertise in qualitative research also provides a valuable position from which to sustain a dialogue between the theoretical claims of actor network theory and the methodological implications of these assertions.

In 1989 Margaret Fitzsimmons argued the neglect of nature by critical geographers was due to the disciplinary separation of human and physical geography, the theoretical divide between nature and culture, and the positionality of an urban intellectual endeavour. Her extension of Marxist ideas on the social construction of space to a 'social nature' was extremely influential, but it did not address a remaining division between the meanings and materiality of nature. It was difficult to conceive of a locally grounded and meaningful, yet economically and historically specific nature (Whatmore and Boucher, 1993). I would suggest that actor network theory has the potential to act as a 'middle range theory'; developing downwards from a broad range of political and social ideas and developing upwards from substantive analysis, to attempt to address this absence once again. In this thesis I have developed the valuable insights that debates around nature and modernity, and nature in cultural geography offer for understanding the contributions of natural history films to reconfiguring contemporary meanings of nature. This has been achieved by simultaneously working upwards from the situated orderings of nature that natural history film-makers have achieved. This is the first time that this history has been told, and there is scope for revealing more about the sites and processes involved in the complex history and production of the hybrid forms of natural history films. I would suggest that in trespassing across the purifications of nature and culture, actor network theory offers a

useful heuristic for expanding the scope of this analysis to encompass more entities, more political possibilities and more conversations between differently situated knowledges.

QUESTIONNAIRE TO ALL MEMBERS OF THE NHU

NETWORKS OF NATURE: A NATURAL HISTORY OF NATURAL HISTORY FILM-MAKING

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I am currently in the Natural History Unit researching a PhD on natural history film-making, as a way of exploring the changing way we look at nature and culture. My aim is to incorporate recognition of the importance of natural history broadcasting within a history of changing British attitudes to nature, science and conservation. In particular, I'm interested in the way that developments in broadcasting, technology and zoology are factors that reflect, but also change the way we see nature. You may have seen me in the library where I have been working my way through the archives of the NHU material.

Alastair Fothergill has agreed that I could ask your help in beginning to structure this material in terms of key moments, significant events, technologies and/or people. Obviously, some programmes such as *Life on Earth* are immediately recognisable as significant. But there are obviously many more, and I would love to know what you, as the professionals, see as these defining moments.

I would be very grateful if you could spare a few moments to fill in the following questions. I hope that this will be easy and fun to fill in.

DEFINING MOMENTS

1) Which people, programmes or technologies, in your opinion, have been most influential in terms of the development of Natural History film-making at the BBC?

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2) What, in your experience, has been most influential in terms of public appreciation or awareness?

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and, 3) What has been most influential to you personally?

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PERSONAL DETAILS

Your Name: .....

What is your current project or position?.....

How long have you been in the BBC Natural History Unit?.....

How did you get involved with Wildlife film-making?

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Thanks very much for your time, Gail.

I am interested in talking to a wide range of people about their perspectives on the history of the Natural History Unit, if you would be interested in talking about your experiences, please could you include a contact extension number.

Telephone Extension no:.....

THE QUESTIONNAIRE CAN BE RETURNED VIA INTERNAL MAIL TO THE LIBRARY, PLACED IN A BOX IN THE LIBRARY, OR RETURNED TO ME AT THE ABOVE ADDRESS.

Appendix B
Questionnaire Responses

23 out of the 170 questionnaires were returned. The responses are presented below, ordered in accordance with position and period of time the individual has been in the Unit, so as to make comparisons with the filmography more straight forward. Boxes are used emphasis the responses of people followed up by interview. 'Anon' refers to responses which did not include a telephone number for further discussion. For interviewees I approached through other means, discussion of the three questions in the questionnaire formed part of the conversation.

I have reproduced the questionnaire responses much as they were written, with small alterations for clarity. Full names are given for people interviewed in their particular position in the Unit and as agreed. Pseudonyms are used for everyone who was recruited through the questionnaire or other means.

Name	Unit Milestones	Audiences Appreciation	Personal importance
Richard Brock series editor 32 years	talked through in interview		
John Sparks series editor The Natural World 30 years	talked through in interview		
Anon 16 years	*Supersense*, *Life in the Freezer*, *Plants*	*Supersense*, *Life in the Freezer*, *Plants*	*Supersense*, because I worked on it!
Elizabeth (pseudonym) Series Producer 13 years	The Unit has evolved over the years and co-operation and the team building of ideas has been one of its strengths. For example David Attenborough has been in the limelight, but the team behind are the creators. The technicians have encouraged the programme makers to experiment and vice versa and so enthusiasm has been exploited. We have always been encouraged to experiment, so many names spring to mind: Armand and M. Denis, Eric Ashby, Hans and Lotte Hass, Johnny Morris, Peter Scott, Barry Paine Programmes: Kingfisher, Woodpecker and their cameramen, Hugh Miles, Oxford Scientific Films	David Attenborough. Programmes which are non controversial, non threatening, beautiful and wonderfully crafted	Freedom to experiment and go my way. Good support and experts all round. Cameramen, editors etc.
Alastair Fothergill Head of Unit 12 years	talked through in interview		

Ruth (pseudonym) assistant producer 12 years	Programmes: *Life on Earth*, *Living Planet*, *Trials of Life*, *Private Life of Plants*, *Supersense*, *Life in the Freezer*. People: David Attenborough (!) John Downer, Alastair Fothergill (recent developments) Technology: macro studies, underwater, low light	The combination of "blue-chip" programme making (*Trials of Life*, *Private Life of Plants* etc.) with popular accessible natural history like *Supersense* and *Nature Detectives* and the increasing diversity of our programmes	The increasing diversity of programme content and style, a much more creative attitude to the presentation of natural history.
Anon 11 years	Owen Newsman and John Downer: *Serpents' Secrets* (Wildlife on One): first effective use of low wide angles for dramatic effect: novelty for me has now worn off due to overuse and ineffective use with no feeling for dramatic tension. *Hawaii: Islands of the fire Goddess* (The Natural World): first and brilliant commentary involving mythology, ritual and legend. *Aliens from Inner space* (Wildlife on One) working with difficult animals to create "charisma" and "intimacy"	I think the programmes that highlight a real emergency: *Tiger Crisis*: or emotive issues such as whaling do increase awareness: (*Battle for the Whales*) overall TV has bought wildlife into homes and to children, in particular who otherwise wouldn't be interested (e.g. *Wildlife on One* and *The Natural World*)	Keenan's programme with David Hetton's commentary on Hawaii (the first one) Owen Newsman's sensitive use of long lens photography to capture the spirit of an animal.
Anon 11 years	Johnny Morris Armand and Michaela Denis, David Attenborough *Life on Earth Living Planet*, *Animal Magic*. Time Lapse sequences	*Life on Earth*	The *Trials of Life*
Iain (pseudonym) Producer 9 years	David Attenborough and *Life on Earth*. *Wildlife on One*, particularly those made by Keenan Smart. Chris Parsons as Head of Unit. John Downer and *Supersense* and *in flight movie* (new techniques) *Kingdom of the Ice Bear* Mike Salisbury/ Hugh Miles. *Really Wild Show*: new ways of doing things. *Plants*: Mike Salisbury: Time lapse.	David Attenborough: *Life on Earth*. *Wildlife on One*: *Meerkats*. *Life in the Freezer*. *Plants*	*Animal Magic*! *Life on Earth*. *Wildlife on One* especially the *Bat that cracked the frog code*. *The Global Detective*, *Nature* special Gorillas.
Anon 7 years	People: Sir Peter Scott, (first on BBC to make natural history accessible to a wide audience on TV) Sir David Attenborough: world famous. Programmes: all the David Attenborough "blue chip" series e.g. *Trials of Life*, *Life in the Freezer*, The *Private Life of Plants* Technologies: constant improvements in technology, mainly developed in-house by keen cameramen, engineers, pioneering work in macro studio.	Natural History is ideal "family viewing" and this is now becoming a rare commodity. It appeals to all age groups. TV uses the visual medium to bring viewers pictures that they would never see with their naked eye. Exciting techniques give people an insight into hitherto unknown parts of *The Natural World*. (e.g. timelapse/lapsed time photography in *Private Life of Plants*.	Working with a bunch of dedicated enthusiasts who know their programmes are amongst the best in the world

Oliver (pseudonym) Producer 7 years	David Attenborough and *Life on Earth* was the first major landmark and development/ change since the start of nature documentaries. Since then there has been only one other really significant change/ development. This was *Supersense* produced by John Downer. This was possibly the most stylistically /technically influential nature series ever made and it is hard to find an NHU programme since that has not been significantly affected by it.	*Life on Earth* and subsequent Attenborough series. *Wildlife on One Meerkats*. *Supersense* and John Downer's *Wildlife on One* "*in Flight Movie*". Urban foxes in Bristol. These seem to be the ones most mentioned by the public. In terms of sequences: the killer whale sequence in "*Trials of Life*" and the flying with Birds sequences in *Supersense* and *in flight movie*	*Life on Earth*. *Supersense* conceptually and technically as remarkable as *Life on Earth*. Both hugely exciting series.
Anon 7 years	People: David Attenborough, Chris Parsons, Desmond Hawkins, Jeffrey Boswall, John Downer. Programmes: *Life on Earth*, *Living Planet*, *Plants*, Wildlife on One, *Supersense* Technology: Tracking Time Lapse (*Plants*) Underwater Beta	David Attenborough Series: *Life on Earth*, *Living Planet*, *Trials of Life*, *Private Life of Plants*, *Life in the Freezer*, *Meerkats United*	Series: *Zoo Quest*, *Animal Magic*, Cameramen: Hugh Miles, Owen Newsman
Anthony (pseudonym) producer 6 years	Programmes: *Life on Earth*, *Supersense*, *Private Life of Plants*, *Really Wild Show* People: David Attenborough, John Downer, John Sparks, Mike Beynon Technology: variable speed filming, straight-scope, CSO, non-linear edit facilities	Unfortunately animal clichés and Attenborough	John Downer's film approach
Alex (pseudonym) Programme Budget Asst 6 years	The pioneers like sir Peter Scott and David Attenborough. Then David Attenborough again for introducing the 50 minute colour film to BBC2 with the *World About Us*. More recently John Sparks for *Realms of the Russian Bear*. John Downer/Nigel Marvin for developing new technology and ways of filming with straight scope and endoscopes (*Supersense*) Programmes like *Life in the Freezer* and *Private Life of Plants*	The continuing work of David Attenborough. He is the NHU to most of the public, who believe he makes all our programmes. Opening up the Antarctic and the world of *Plants* has captured the public's imagination recently	most of the above really

Nic (pseudonym) Researcher 5 years	David Attenborough (of course) *Life on Earth*, *Supersense*, *Private Life of Plants*. Development of bubble helmets for underwater presentation, motion controlled timelapse as seen in *Plants*	*Life on Earth* and *Plants* and *making of* .... programmes	Difficult to single out: its a huge experience to work here. I was probably influenced before I got here by watching TV as a child. I've worked on so many very different projects. probably the biggest "memories" are of filming "out there" especially in Africa.
Jenny (pseudonym) Assistant producer 5 years	talked through in interview		
Denese (pseudonym) Researcher 5 years	talked through in interview		
Ben (pseudonym) Assistant producer 5 years	David Attenborough: big series ideas combined with intimate personal non-patronising style of presenting. Wildlife on One: story led, compact natural history programmes with strong emphasis on scientific info and behavioural footage. John Downer: moved film-making style away from long lens at arms length style to in your face wide angle close up, coupled with fast cutting and lots of time lapse	Huge public following for David Attenborough. Huge viewing figures for shows like *Trials of Life* which bristled with scientific content, coupled with stunning pictures and David Attenborough. Negative public response (viewing figures) for environmental programmes. Continuing public demand for "soft" programmes featuring cuddly mammals	My own experience of and passion for natural history, since early age. Realisation that TV programmes can generate emotion towards wildlife and that's how attitudes towards the natural world and its conservation are generated. This is a powerful medium. Enjoyment of a wide range of TV formats and styles not just natural history programmes
Anon 4 years	*Life on Earth* and of course David Attenborough influenced a generation. John Downers *Supersense* changed our approach to film-making developing a more directed form of natural history	I think it is a cumulative effect over many years while one programme may have been an immediate reaction I think its more the breadth of wildlife programmes that influence people. However, the natural history unit is remarkably slow in following through our environmental stories.	*Life on Earth*

Anon 4 years	Sir David Attenborough for his passion and enthusiasm which is conveyed through his programmes such as *Eastward with Attenborough* and *Life Trilogy*. John Downer: pioneering photography in *Supersense* and *Life sense*. Macro photography techniques such as endoscope, timelapse developed in the macro studios Alan Hayward and incredible techniques used in *Private Life of Plants*	Life Trilogy, particularly *Life on Earth*. *Wildlife on One* strand reaching out and making accessible animals which they wouldn't normally encounter British animals e.g. urban foxes filmed in Bristol. Simon King animal dramas very popular also his programme "*Brockside*".	Initially (as a child) *Zoo time* with Desmond Morris. Then Jacques Cousteau's marine programmes: wonderful! Sir David Attenborough's programmes especially *Life on Earth* series and *Living Planet*.
Alison (pseudonym) librarian 3.5 years	In the early days Peter Scott. That was one of the reasons that the NHU is sited in Bristol. Now obviously David Attenborough: *Life on Earth* was a special series and took wildlife film-making forward in a great leap. Techniques: underwater filming, especially on Beat (Sea Trek) which gives such wonderful colour. Time lapse seen at its best in *Plants*. Flying along with birds i.e. filming from a hand glider: endoscope shots down burrows: low height, low angle and big close up to bring intimacy to a programme and to give advert and feature film quality material	Definitely Attenborough. To most members of the public his name is synonymous with wildlife. They also like domestic animals e.g. foxes, badgers. They also like behavioural studies of cute animals e.g. *Meerkats* and live watches e.g. bird in the nest. Shark programmes are always popular.	As a child: *Zoo time* (Granada), Jack Hargreaves programmes (Thames) David Attenborough. I remember seeing *Eastward with Attenborough* when I was a teenager. *Life on Earth* was a big influence. *The Living Desert*: Walt Disney.
Anon 3 years	*Wildlife on One*, *Natural World*, magazine programmes and one off specials, especially live.	Live broadcast, especially programmes that go to countries that most people couldn't get to	Programmes that have brought me wildlife from countries I would probably never go to.
Anon 18 months	People: Eric Ashby, David Attenborough, Simon King, Tony Soper. Technologies: high speed cameras, timelapse photography. Programmes: *Wildlife on One*: early series. *World About Us.*	Good story lines. Block buster programmes like Living Isles, *Trials of Life* and more recently *Plants*. UK Programmes also have great public appeal such as Daylight Robbery, *Who's a Clever Birdy*.	Programmes that are not too "clever" in their technical imagery. If I feel as though its me watching the subject then I feel more influenced than by those startling, but unreal, close ups. Also *World About Us* programmes on the life of a subject.
Juliet (pseudonym) Researcher 1 year	David Attenborough *In Flight Movie*, *The Private Life of Plants* Introspective camera (termite nests) Time Lapse photography.	National passion for wildlife.	Researching the depth of knowledge of a species and the BBC's incredible time and money devotion for wildlife film making.

Adrian (pseudonym) Researcher 1 year	David Attenborough is the obvious figure head for the NHU and its work, but I think the public do appreciate the work of cameramen. The killer whales, *Meerkats*, *Freezer* and *Plants* are all mentioned by the public, but I think the sustained high quality of material is the key to our success.	Attenborough is always mentioned as the natural history person. The photography and unforgettable images are also mentioned a lot.	Probably the *World About Us* when I was younger. The amazing biological stories and photography.

Charlotte (pseudonym) Researcher 1 year	Technology: use of time lapse and computers in *Plants*. High speed cameras, low light, small cameras, animal point of view shots. Advanced underwater cameras. Major use of graphics, editing on AVID. People with innovative ideas have the most influence and people willing to take risks in time effort and money to achieve new goals.	Films slanting on conservation issues. Films getting the public to see from the animals perspective	Working with producers who are full of new ideas and different ways of filming animals. Exciting and new equipment e.g. IMAX which shows the public animals in a way they have never seen before

Gareth (pseudonym) Researcher 3 months	*Life on Earth* and *Living Planet* for setting standards in filming behaviour. *Supersense* and *Life sense* for developing point of view shots, straight scopes and CSO blue superimposition. Alan Root's films (stylish integration of people and natural history: beautifully crafted)	Attenborough Trilogy and his use for narration on *Wildlife on One* and other programmes despite little involvement in many of these programmes on a creative level. *Supersense*, Partridge's *Okavango* series, *Life in the Freezer*, *Plants* were all outstanding in their time with real impact on public and *Meerkats* United (Wildlife on One).	Attenborough Trilogy, *Life in the Freezer*, *A Passion for Angling*, *Nightmares of Nature*, *The Tides of Kirawira*, *Crater of the Rain God*, *Queen of the Beasts*, *Aliens from Inner Space* (Wildlife on One)

Susie (pseudonym) Researcher 2 months	David Attenborough. Cameras allowing for more freedom of movement, microscope lens that allow private filming of intimate lives. Time Lapse photography	David Attenborough as front man and his narrative technique	Constant learning: being more aware of the natural world adds another dimension to life. watching programmes and making them makes you realise the more you know the less we really know.

Appendix C
Natural History Unit Filmography

This filmography was put together from card indexes held in the BBC library; early film scripts where card indexes were incomplete; and from the on-line computer records for later films, when cataloguing had moved from cards to computer. The index cards carried information on title, transmission date (tx), with some additional information on bought in footage, specially shot material, copyright, repeat dates, audience figures and historical notes by Mike Kendall, dated 1978 (previous archivist). The computer catalogue was compiled largely for programme research rather than historical reconstruction, so focused upon transmission details, production copyright and shot listings. Additional details on films have been added following interviews and other conversations.

There are gaps in this filmography. The filmography focuses upon the major series. One-off specials, which do not fit into strands, are excluded unless they are discussed in the text of the thesis. There is a gap in the Unit archives, which resulted from the transferral of material from card index to computer. There may also absences in the late 1980s and early 1990s, as some NHU material was not yet on the computer, and I could have overlooked NHU transmissions in the television schedules. I hope though that all major productions are included.

The filmography also lists other programmes not produced in Bristol. These are indicated in brackets and are included for comparison, and when mentioned in the main part of the thesis.

Date	***Title***	**Biography Notes**	**Programme Notes**
1922	**British Broadcasting Company Ltd formed**		
1927	**British Broadcasting Corporation established by Royal Charter with Sir John Reith as Director General**		
1936	**Inauguration of BBC Television service (world's first regular high definition service)**		
1939	**Television service closed down for defence reasons, reception was confined to London and just 5,000 sets had been sold; home service continued**		
1946	**Television service resumed with the introduction of a £2 TV and radio license**		
1946	*The Naturalist*	presenter: Peter Scott producer: Desmond Hawkins	radio series on home service
1947	*Bird Song of the Month*		radio series on home service
1948	*Out of Doors*		radio series, light programme
1951	*Birds in Britain*	presenter: Peter Scott producer: Desmond Hawkins	radio series on home service (subsequent radio programmes following the start of television broadcasts are not listed in this filmography)
5.53	*Severn Wildfowl*	Peter Scott	first television outside broadcast Slimbridge
12.53	*Wild Geese*	presenter: Peter Scott	first of a series of monthly programmes on television

8.54	*Look*	presenter: Maxwell Knight	single programme prior to series
11.54	*(Filming Wild Animals)*	Armand and Michaela Denis	expedition film by Armand and Michaela Denis shot in Africa and transmitted on BBC television from London
12.54	*(Zoo Quest to West Africa)*	presenter: David Attenborough	television series from London with audience reaction index of 76
1.55	*Woodpeckers*	camera: Heinz Sielmann	landmark natural history programme featuring footage from inside woodpeckers nest

22.9.55 ITV transmission begins

9.55	*(Zoo Quest to Guyana)*	presenter: David Attenborough	Television series from London, RI of 86

1955 ***Look*** presented: Sir Peter Scott

8.55	*Foxes*	
8.55	*Atlantic Seals*	AI 74
9.55	*Land of the Flamingo*	AI 72
9.55	*Vanishing Animals*	AI 72
10.55	*Squirrels*	Heinz Sielmann in the studio
10.55	*Wildlife in Trust*	RI 77
11.55	*Three Bird Studies*	RI 68
11.55	*Visit to the Stork*	RI 72
12.55	*On the Edge of Dartmoor*	RI 82, with H. G. Hurrell
12.55	*Hamsters*	RI 71
1.56	*Birds in winter*	RI 71, sequences on hides and stalking
1.56	*Tracks and Signs*	
1.56	*The Gannet*	RI 67
2.56	*Red Deer*	
2.56	*Frogs and Newts*	RI 68
3.56	*Adelie Penguins*	RI 68
4.56	*Derbyshire Dales*	RI 68
4.56	*Puss moth and Swallowtail*	RI 69, 1st film using macro-photography
5.56	*Slimbridge Outside broadcast*	RI 72, Peter Scott setting up wildlife trust with live bird watch
5.56	*The Twenty First*	Centenary edition with clips introduced by Peter Scott
6.56	*Polecats*	RI 78, film by Heinz Sielmann
6.56	*Animals as Friends*	RI 76, featuring tame wild animals and pets in Frances Pitts House.
10.56	*Whales*	RI 82, first broadcast of blue whales
10.56	*Little Drops of Water*	RI 61, featuring Hungarian voles
11.56	*Highland Birds*	RSPB film
11.56	*Search for Water*	RI 83, material submitted by Maervyn Clowie Game warden in Africa with shots of rhinos, hippos and elephants
12.56	*Wild Spain*	with footage of Hoopoe, Black Kite and Red Kite
1.57	*Flight*	RI 79
1.57	*Dinosaurs and Pterodactyls*	RI 70, includes footage from Warner Bros. Lost World

1.57	*Konrad Lorenz*	written and directed by Jeffrey Boswall
2.57	*Cats*	RI 58
2.57	*Saker Falcon*	RI 72
3.57	*Lion and Waterhole*	
3.57	*Round the World*	RI 82, compiled from Faraway Look series
4.57	*Portraits of animals*	
1.58	*Emperor Penguins*	RI 86, classic film with first ever film of emperor penguins life cycle filmed on Expedition Polaires Francais
1.58	*Summer Meadow*	RI 84, a Sielmann classic
2.58	*On the Edge of Dartmoor*	RI 8, with the Naturalist H.G. Hurrell and his film of birds
2.58	*The Fulmar*	RI 71, historic scientific documentation study of the fulmar in the Atlantic with James Fisher
3.58	*Wild Spain no.1*	RI 82
1958	*Wild Spain no.2*	RI 76
1958	*A tale of 2 worlds*	study that looks at insects above and below the surface of a pond.
5.58	*The Hyena*	RI 81
5.58	*Broadland Birds*	RI 77, with Walter Higham films of the birds of the Norfolk Broads in 1920s
6.58	*The Giraffe*	RI 75
6.58	*The Return of the Avocet*	RI 74 RSPB film of RSPB symbol
7.58	*American Holiday*	RI 71
7.58	*City of Flamingos*	RI 79
10.58	*Devil Fish*	RI 74, Disney Co-production linked through Jules Verne, 20 000 Leagues Under the Sea
11.58	*Scottish Highlands*	RSPB film, directed by George Watson
11.58	*Out of the Egg*	RI 78, compilation film featuring David Attenborough
12.58	*The Start of it all*	RI 77, a tribute to Cherry Keaton who filmed 1871 to 1940 for bioscope
12.58	*Reindeer and Seals*	RI 75, film by Per Host
2.59	*South of the Roaring Forties*	RI 73, bought in from explorer Niall Rankin.
3.59	*Birds of Holland*	RI 79, film by Lord Viscount Alanbrooke
3.59	*Insect Homes*	RI 81, film by Dr. J. D. Carthy a lecturer in zoology
6.59	*Tobago Birds*	RI 75
7.59	*Roof of Japan*	RI 84, bought in from Japan
7.59	*Kingdom on the Waters*	RI 72, film of the Southern Hungarian marsh country by manager of Bird of Prey Settlement, script shows that the section on conditioning birds to film was not included in transmission
7.59	*Sharks and Dolphins*	RI 84, film of Miami Seaquarium
4.60	*Congo Forest*	RI 83, classic film with Peter Scott, Heinz Sielmann, Gerald Durrell in studio. First Sielmann film outside Europe, used Cinemascope and required team of 20, hides, trees to be felled for light and as had to be so near the animals
6.60	*Summer with the Storks*	RI 89, a Sielmann Classic

6.60	*Patagonian Journey*	RI 80, Gerald Durrell animal collecting trip
6.60	*Reed Warblers*	RI 83, RSPB film
6.60	*Seashore*	RI 76
6.60	*Expedition to Ascension*	RI 74
7.60	*Foxes and Otters*	RI 78, with H.G. Hurrell
10.60	*Dragonflies and Preying plants*	RI 82
10.60	*Bird Migration*	RI 75
10.60	*The Enormous Whale*	RI 77
10.60	*Summer on the Cliffs*	RI 73, RSPB film
11.60	*The Mute Swan*	RI 75
11.60	*The Pink footed Goose*	RI 69, one of the first wildfowl trust expeditions to Iceland
5.61	*The Woodwasp*	RI 81, classic film featuring a macro photography of insects that led to the development of Oxford Scientific films, filmed by G. Thompson and E. Skinner.
5.61	*The Best of Walter Higham*	RI 83
5.61	*Expedition to Bulgaria*	RI 71, Guy Mountfort shows Sir Peter Scott material from his expedition to Bulgaria
5.61	*Cats cool and sultry*	RI 82
5.61	*Darwin's Islands*	RI 77
11.61	*L for Lion*	RI 80, first major international conference for the protection of animals in Africa featuring Julian Huxley, Frank Fraser Darling and A. and M. Denis
11.61	*Long legged Spinners*	RI 82
11.61	*Minsmere*	RI 72, RSPB film
12.61	*The Silent Watcher*	RI 87, film on and by Eric Ashby, who kept rights to the material
12.61	*Well Shot*	RI 80, first film competition motivated by the Council of Nature
12.61	*Urchin of the Hedgerow*	RI 73, RSPB film featuring hedgehogs
12.61	*Ibex and Lammergeier*	RI 82, Eric Hosking and E.D.H. Johnson
	Secrets of the Coral Reef	
	Off the Beaten Track	
4.62	*Baboons*	first baboon study on film
4.62	*Shelducks*	
	Compilation	
	Through a garden window	
	Swallows at the mill	
1.63	*Birds of the Southern Oceans*	
	Animals and their Young	
	The Lake	
5.63	*Centenary Edition*	
6.63	*Beaver Country*	RI 85, 11%
7.63	*A Hare's Life*	RI 77 8%, filmed by Eric Ashby
7.63	*Aristocrats of the air*	RI 74 6%
7.63	*Flittermice*	RI 77 6%

7.63	*The Weed Dancers*	RI 67 5%, RSPB film on Great Crested Grebe
7.63	*Sharp Shooting*	RI 79 5%, 2nd film competition
11.63	*Suddenly last winter*	RI 87 11%
11.63	*Fish Families*	RI 84 6%
11.63	*Cairngorm Country*	RI 82 10%
12.63	*Stranded*	RI 75 9%
12.63	*Forest Diary*	RI 86 9%, filmed by Eric Ashby
12.63	*Mewstone Rock*	RI 74 8%
6.64	*Fiddlers and Skippers*	RI 81 9%
6.64	*Instinct or Learning*	RI 76 7%
6.64	*Masters of Movement*	RI 75 6%
6.64	*The Gull Watchers*	RI 74 7%, follows Oxford zoologist on back headed gulls, filmed by and featuring Niko Tinbergen
7.64	*Holland over the Dyke - part 1*	RI 75 12%
7.64	*Holland over the Dyke - part 2*	RI 73 18%
11.64	*Town Mouse, Country Mouse*	RI 81 9%, the notes on card reads that Jackman and Pegg supplied the BBC with sufficient exposed 16mm black and white film material to make 3 films. The cost was £600 for each Look *Stranded*, *Torbay* and *Town Mouse*
11.64	*Appointment at Seal Rocks*	RI 73 11%, an ABC film
11.64	*Conservation in Action*	AI 77 5%
12.64	*Ponies in the New Forest*	AI 81 11%
12.64	*At the Danube Delta*	AI 70 9%
12.64	*Beaver in the Bag*	AI 79 11%
6.65	*The Living Pattern*	
6.65	*Home of the Kangaroos*	
6.65	*Islands of Plenty*	
11.65	*Lone Fisherman Herons*	
11.65	*Beachcombers*	film from Ravenglass
12.65	*Look at the rare ones*	film by Eugen Schuhmacher
12.65	*Emperors on Ice*	
4.66	*Living with Nature*	
5.66	*Private Life of the Kingfisher*	famous film by Ron Eastmann
5.66	*China*	
5.66	*Perfect fish*	
5.66	*Pigeon hole*	
12.66	*On the tracks of unknown animals*	
2.67	*Living with Animals*	
6.67	*Giant Panda*	
11.67	*Birdwatcher Extraordinary*	
11.67	*An Island in Danger*	featuring the Aldabra atoll which was threatened by the defence plans
4.68	*The Fire Giant: Surtsey*	featuring an island near Iceland
4.68	*Island of Eden*	The wildlife of the Seychelles

	5.68 *Biscay*		
	6.68 *Everyman's Antarctica*		
	8.69 *Down Under Capricorn*	Vincent Ball travels across Queensland	
1956	*(Travellers Tales)*	Armand and Michaela Denis	series then spans to 1968 with RI 65-80 and share 5-13%, transmitted from London
4.56	*(Diving To Adventure)*	Hans and Lotte Hass	film that took camera under the surface of the ocean for the first time on British television, transmitted from London
10.56	*(Zoo Quest for a Dragon)*	David Attenborough	series from London, AI 86
6.57	**Formally Registered as Natural History Unit**		
11.57	*(Zoo Quest for the Paradise Birds)*	David Attenborough	series from London, RI 82
1957	*Faraway Look*	Peter Scott	an extension of the Look format to incorporate more overseas material
1958	*Travellers Tales: On Safari*	Armand and Michaela Denis	followed by Safari to Africa
1958	*(Zoo Time)*	presenter: Desmond Morris, production: Granada Television, producer: David Warrick	Series filmed in a studio set up at London Zoo and Chester, ran until 1968
1958	*Undersea world of Adventure*	Hans and Lotte Hass	series that focused on underwater photography, some listed as London, some NHU
1958	*Out of Doors*	presenter: Bruce Campbell	television show for Children, incorporated a club that attracted 25,000 members, focused on British Wildlife
1959	*(Zoo Quest in Paraguay)*	David Attenborough	Series from London, RI 83
1959	*News from the Zoos*	James Fisher	
1959	*Faraway Look*	Peter Scott	series 2
1960	**Number of television licenses reached ten million**		
1960	*Diving to Adventure*	Hans and Lotte Hass	eg AI 76.
1961	*(Survival)*	producer: Colin Willock, camera: Aubrey Buxton	Anglia Television
6.61	*(Zoo Quest to Madagascar)*	David Attenborough	series from London, innovating with the use of action and music in wildlife films

1961	*Discovery Series*	Photography: Heinz Sielmann	e.g. RI 77
1961	*World Zoos*	presenter: James Fisher	
1961	*Zoo Packet*		further zoo series
1961	*Discovery*		
1961	*On Safari*	Armand and Michaela Denis	
1962	*Animal Magic*	presenter: Johnny Morris, appearances by Tony Soper, Gerald Durrell, Peter Scott. producer: Douglas Thomas	ran for 21 years until 1983 from Bristol Zoo
1962	*On Safari*	Armand and Michaela Denis	further series
2.63	*Two in the Bush*	producer: Chris Parsons presenter: Gerald Durrell camera: Jim Saunders	commissioning from NHU of overseas series on the conservation of New Zealand and Australia
10.63	*The Rare Ones*	camera: Eugen Schuhmacher	Endangered animals filmed in colour, introduced by Peter Scott, and shown in black and white in Look.
1963	*The Major*	producer: Chris Parsons	first colour production, though not transmitted in colour, suggested as first story by NHU featuring the story and life of a village oak that was to be felled.
4.64	**BBC2 transmission begins with 625 lines from Crystal Palace**		
1964	*On Safari*	Armand and Michaela Denis	further series
1964	*Look Again*	Peter Scott	Repeat series of Look on BBC2
1965	*On Safari*	Armand and Michaela Denis	further series
1965	*Zoo Challenge*		BBC1
2.65	*The Rare Ones*	film by Eugen Schuhmacher.	Series 2, filmed in colour by German cameraman and introduced by Peter Scott. Repeated in 1969
1965	*'Life' in the Animal World.*	producer: Ron Webster presenter: Desmond Morris, Film Editor: Jim Cryan, Assistant producer: Richard Brock	Featured much bought in film with Dr Desmond Morris in conversations with various experts. Introduced as a fortnightly challenge to our ideas and understanding of the natural world. Audience share 0.4% to 5.2%. AI 62-78, shown on BBC2 until 1968

2.66	*Catch me a Colobus*	presenter: Gerald Durrell, producer: Chris Parsons.	Follow up to Two in the Bush
1966	**BBC proportion brought in a new commercial drive for broadcasting**		
1967	*Silent Watcher: the best of Eric Ashby*	Eric Ashby	special one off compilation of Ashby films
1967	**Some films transmitted in colour during 1967 on BBC2**		
1967	*The Private life of the Kingfisher*	Filmed by Ron Eastmann	the first wildlife colour film that was shown on British television transmitted as *Look* on BBC2
3.12.67	**BBC2 opens full colour service on 625 lines**		
12.67	*World About Us*	commissioner: David Attenborough series editor: Tony Isaacs, producer: Christopher Parsons. Assistant producer: Barry Paine, various producers for individual programmes.	commissioned as a "series of films from all over the world about our astonishing planet and the creatures that live on it" (source BBC publicity material) for BBC2, included half nature films to be met from the output of the NHU and half other features in London. Involved buying in colour film, including footage from Jacques Cousteau. The series finished in 1985 when the natural history part became *The Natural World* and the anthropology aspect largely disappeared.
1967	*Animal People*	featuring: Gerald Durrell, Hurrell, Peter Scott, Leonard Williams and Frank Sawyer	early attempt at a drama and natural history series on naturalists and scientists on BBC1
9.68	*Wild New World Series*	camera: Heinz Sielmann. and others, producer: Nicholas Crocker	shown on BBC1
1969	**November 15th BBC1 goes into colour**		
1969	**Radio 3 Reith Lectures on conservation by Frank Fraser Darling**		
1969	*Wild World*	producer: John Sparks camera: Heinz Sielmann presenters: Charles Coles, Liz Jay, David Cabot and later Tony Soper.	magazine series for children, that ran for 3 series, in early 1969, late 1969 and last one in colour, shown on BBC1
11.69	*World About Us: Mzima*	camera: Alan Root	film commissioned from Alan Root for the BBC, transmitted in the States under Survival
1969	*Great Zoos of the World*		series for children. E.g. figures 0.6% 0.3m, shown on BBC1

10.70	*(Life in Our seas)*	presenter: David Bellamy.	series about marine biology of the North sea, remade from an NDR series for Continuing education. note on card says that "the programmes were made by sellotape joining together the original material and transferring to videotape for transmission"
1970	*World About Us: Baobab*	camera: Alan Root	film commissioned from Alan Root and shown in the World About Us series, transmitted under the Survival name in the States
1970	*Private Lives*	producer: Jeffrey Boswall	Series on the private lives of animals that featured the behaviour of a single animal in each programme, shown on BBC1
1970	*The Country we are making*	producer: Richard Brock	investigated the human impact on the environment and the plight of the natural world to coincides with the countryside conference in 1970 with Prince Philip.
11.70	*Wildlife Safari to Ethiopia*	presenter and producer: J. Boswall, camera: D. Fisher	shown on BBC 1, ratings 1.75m, share 3.5%
12.71	*Soper at Large*	presenter: Tony Soper, producer: John Sparks	programme for children featuring ecology and adventure, shown on BBC 1
1971	*The Countryman*		shown on BBC 1
1971	*The Countryman at Christmas*	Duncan Carse	one off Christmas special. The format was repeated in 1973, 1974 on BBC 1
11.72	*Wildlife Safari to Argentine*	presented and produced by Jeffrey Boswall	shown on BBC1, ratings up to 3.65m, share 7.19%
1972	*Vanishing Hedgerows*	Henry Williamson	one off conservation programme
1972	*Great Parks of the World*	Anthony Smith,	shown on BBC1
1972	*The Countryman*		Second series, shown on BBC1
1972	*Animal Stars*		shown on BBC1
1972	*Around the World in Eighty Minutes*	presenters: Joyce Grenfell, Kenneth Allsop, David Attenborough, Tony Soper	World Spectacular featuring a compilation of different people in different locations.
1972	*World About Us: The Insect Man*		NHU first dramatised film of the story of Jean Henri Fabre as World About Us

1972 The slow growth of cable television begins in Greenwich, covering 9,000 homes

1973	*Web of Life*	producer: Richard Brock, script: John Lloyd, narrators: Michael Flaunders and others, camera: Ron Eastmann	Ecology series on BBC 1 that shows the beautiful intertwining of the living things of our varied earth. Awards from British sponsored film award Brighton, 1973 - Gold award for education, US industrial film festival Chicago 1973 Golden camera award, certificate of merit British association of film and television awards. Widely distributed overseas. gained wide critical acclaim, but limited audience figures
1973	*Eastwards with Attenborough*	writer and presenter: David Attenborough, producer: Richard Brock camera: Maurice Fisher.	Audience figure 9.35m, share up to 20%, on BBC 1
1973	*Expedition North America*	camera: Heinz Sielmann, producer: Nicholas Crocker	part of the Wild New World series
1973	*Natural Break Series*		short 10 minute programmes on BBC1
4.73	*Their World Series*	producer: Winwood Reade, narrator: Hugh Falkus, scientific advisor: Niko Tinbergen	10 minute slot on various animals and behaviours on BBC2, ratings upto 1.7m, share 3.4%
5.73	*World About Us: Wildlife of New York City*		film in the World About Us series on the wildlife of New York city, first programme to show urban wildlife, co-production with Time Life, 2.35 million, share 4.7%
1973	*The Animal Game*		shown on BBC1
1973	**BKSTS wildlife film-makers symposium starts at Slimbridge**		
3.74	*What on Earth are we doing?*	presenter: David Bellamy, producer: Peter Crawford	Everyman's illustrated guide to the environment on BBC 2
12.74	*Spectacular Britain*	writer and narrator: David Attenborough	Travels through Britain through one year on BBC 1 at peak time, RI 81 17.6% 8.8m, shown as Christmas special
1974	*(Bellamy's Britain)*	presenter: David Bellamy	not natural history unit
11.74	*Wilderness Series*		shown on BBC2, many programmes were Time Life co-productions
1974	**Regular ceefax service started**		
1975	*Animal Marvels*	producer: John Sparks	shown on BBC 1, ratings 0.25m to 0.8m, co-produced by Universal
1975	*The Countryman*		Third series, ratings examples: RI 67, 3.1%, 1.55m

6.75	*World About Us: Okavango*	producer: Michael Rosenberg	famous blue-chip film commissioned from Partridge films on the Okavango
1976	*(Bellamy's Europe)*	presenter: David Bellamy	series from continuing education
6.76	*In Search of Strange Animals*	presenter: David Attenborough	film compilation with RI 80, 16.2% 8.1m ratings on BBC1
8.76	*(Man and Boy)*	Mike Kendall and Simon King	first series featuring Mike Kendall teaching Simon King about British Wildlife on BBC1
12.76	*World About Us: Namib*	commissioned from Partridge films	famous blue-chip film shown in World About Us series on the strange creatures of the skeleton coast. won 1977 British Association Award for most effective presentation to a non-specialist audience of a scientific subject and gold medal at Chicago film festival
1976	*In Deepest Britain*		series on the regional landscapes of Britain that had further series in 1977 and 1978, BBC specially shot for half hour slots on BBC2
1976	*The Country Game*	presenter: Julian Pettifer, camera: Eric Ashby and Bernard Hedges, producer: Peter Crawford, director: Robin Hellier.	series on country activities, work and sport, sounds and sights of the British Countryside on BBC2, maximum ratings 1.7m 3.4% RI 68
1976	*The Great Alliance*		shown on BBC1
1976	*Barnyard Safari*		shown on BBC1
4.77	*Boswall's Wildlife Safari to Mexico*	producer and presenter: Jeffrey Boswall, camera: Doug Fisher, editor: Andrew Nayer	series looking at the response of animals to high temperature and lack of water on BBC1, maximum 1.3%, 0.6m, AI 76
1977	*Wildlife-on-One*	current series producer: Keith Scholey, narrator: David Attenborough	half hour slot on BBC1 at peak time that is still running. Focuses on 30 minute blue-chip on one species or habitat, regularly commissions 8 to 13 programmes a year and gets figures of 8-10 million with high AI.
1977	*The Country Game*		second series of programme on countryside work and sport on BBC2
1977	*Badgerwatch*	producer: Peter Bale, presenters: Bruce Parker, Phil Drabble and Dr. Earnest Neal	first live broadcast of badgers, shown on BBC1, that required the development of film and camera technology to produce broadcast quality pictures in the dark, using infrared the "eye in the night"
2.78	*(Man and Boy)*	presenters: Mike Kendall and Simon King	shown on BBC 1 in the afternoon

10.78	*(The Voyage of Charles Darwin)*	made in London, much material NHU copyright.	Bafta award for best factual series 1979, best film cameraman; broadcasting guild award for best documentary achievement 1979, shown on BBC2
6.78	*Wildtrack*	producers: Tony Soper and Su Ingle	children's series that ran until 1985, taking over from *Out of Doors*, on BBC1
1978	*The Countryman*		afternoon showing of fourth series on BBC1
1978	*The Country Game*	presenters: Angela Rippon and Phil Drabble, producers: Peter Crawford and Robin Hellier	third series of programmes on countryside activities
1979 BBC2	***Life on Earth: A Natural History by David Attenborough***	writer and narrator: David Attenborough, executive producer: Chris Parsons, producers: Richard Brock, camera: Alan Root who bought new standards to the profession with others.	thesis series focusing upon the story of life through evolution, originally shown on BBC2, repeated many times, with higher viewing figures on BBC1, first of the mega series conceived in 1976, seen in more than 100 countries, by 500 million people and used biologists at over 500 universities and scientific institutions, filmed 650 different species and travelled 1.3 million miles to do it, costing over a million pounds, co-production with BBC/Warner Bros./RM productions, largely unawarded but winner of Grand Prix in Paris in 1979

1.79	*1. The Infinite Variety*	RI 83 6.8m
1.79	*2. Building Bodies*	RI 83 6.8m
1.79	*3. The First Forests*	RI 84 5.43m
2.79	*4. The Swarming Hordes*	RI 86 4.49m 8.6%
2.79	*5. The Conquest of the Waters*	RI 88 6.32m 12.1%
2.79	*6. The Invasion of the Land*	
2.79	*7. Victors of Dry Land*	RI 87 5.9m 11.3%
3.79	*8. Lords of the Air*	RI 87 6.89m 13.2%
3.79	*9. Rise of the Mammals*	RI 87 7.93m 15.2%
3.79	*10. Theme and Variations*	RI 89 6.83m 13.1%
3.79	*11. Hunters and Hunted*	RI 87 6.53m 12.5%
4.79	*12. Life in the Trees*	RI 90 9.18m 17.6%
4.79	*13. The Compulsive communicator*	RI 90 7.05m 13.5%

1979	*The Making of the Life on Earth*	presenter: Miles Kington Director and producer: Richard Brock, contributor: David Attenborough	3.97m 7.6%
1979	*Boswall's Wildlife Safari to Thailand*	presenter and director: Jeffrey Boswall	co-production with Universal Pictures Ltd, example ratings 1. RI 79 2.4m 4.6%

1979	*Explorers of the Deep*	Jacques Cousteau	film from the Cousteau Foundation, put together from parts of the *World About Us* and the *World of Jacques Cousteau*
1979	*It's a dog's life*	Presenter: Phil Drabble	example figures 2.5m 4.7% RI 82 on BBC2
1979	*Foxwatch*	producer: Mike Beynon, series producer: Peter Bale	nightly fox watch using infra-red cameras in the cellar of a derelict house in Bristol as the vixen gave birth and raised young shown as compilation in *Wildlife on One*
4.79	*Cameo Series*	camera: Ron Eastmann	10 minute glimpses of the countryside on BBC2
5.79	*Beside the Sea*	presenter: Tony Soper	education/NHU specially shot series on BBC2
7.79	*Wildlife on One: Fox Watch*		compilation of footage of the Bristol fox watch, RI 84, 14.4%, 7.5m
11.79	*In the Country*		specially shot series on BBC 2, figures for first programme 0.8m, 1.5% RI 81
12.79	**Natural History Unit given departmental Status**		
1980	*Bird Spot*		series of 10 minute slots on BBC2
1980	*Encounters with Animals*		bought in film from various places and processed by the BBC on BBC1, example figures 8.9% 4.7m RI 83
1980	*Animal Olympians*	narrator and writer: Jeffrey Boswall	a wide selling BBC film on animal gymnastics, transmission figures RI 85 10.6m 20.4% on BBC1, won three Awards at International Wildlife film festival
2.80	*Birdwatch from Slimbridge*	presenters: Tony Soper, Rolf Harris, Sir Peter Scott	RI 83
10.80	*In the Country*		series two followed by 2 more series. total 46 programmes, example figures 5.9%, 3.0m RI 79 in 1982.
1981	**First video release David Attenborough's Videobook of British Garden Birds**		
1981	*Birdwatch from Minsmere*	presenters: Tony Soper, Roger Lovegrove	maximum figures 2.1m 4.0%
1981	*(Bellamy's Backyard Safari)*	presenter: David Bellamy, producer: Mike Weatherly, camera: Mike Burton	an education series
3.81	*Cameo Series*	camera: Ron Eastman	series 2, example figures 2.7% 1.4m on BBC 2

6.81	*Wildlife on One: Twentieth Century Fox*		Awarded certificate of merit BAAS awards, special recognition for technical creative excellence 3rd International Wildlife film festival Michigan
1982	**The first Wildscreen wildlife film-makers festival is held in Bristol The launch of Channel 4 increases terrestrial competition**		
1982	*The Discovery of Animal Behaviour*	camera: Rob Brown, Hugh Miles, Martin Saunders, Ron Eastman, Owen Newman, Peter Scoones, Oxford Scientific, Jan ven der Han, Hugh Maynard, Maurice Tibbles, Christopher Mylne. All in different locations.	series co-produced with WNET, ABC and RM productions, using dramatic reconstructions of famous experiments in the natural sciences to tell the history of animal behaviour research, shown on BBC2, example figures for programme 1: AI 90, 2.6m 5.2%
1982	*Birdwatch*		live outside broadcast from Foulesleugh on sea birds transmitted 5 times during the day, maximum figures RI 90 4.3m
2.82	*The Flight of the Condor*	narrator: Andrew Sachs producer: Mike Andrews camera: Hugh Miles	The first mini series featuring one subject for 3x50 minute programmes that has been shown in 74 countries, first transmitted as *World About Us* Special, repeated several times, figures 3.4-7.7m, 85-90 RI, 6.6-14.9%, co-prod WNET/13, won awards at International Wildlife Festival, Mass, USA: Gold Tusker Award for best Soundtrack and camerawork for all festival entries; best wildlife cameraman (Hugh Miles), Wildscreen '82; The Christopher Award 1983.
6.82	*Wildlife Talkabout*	producer: Robin Hellier narrator: Derek Jones, featured: Johnny Morris, Michaela Denis, David Shepherd, Phil Drabble, J. Boswall, Densey Clyne, David Attenborough, Martin Sunders, Tony Soper, Anthony Smith, Chris Parsons	25 years on focuses on the people who have made wildlife films for the BBC, figures 2.9% RI 87 2.8m on BBC2
6.82	*Wildlife Jubilee*	producer: Peter Bale and George Inger	25th Anniversary programme, audience figures 15% 7.7m RI 89
9.82	*Wildlife on One: The Bat that cracked the frog code*	producer: Keenan Smart, series producer: Peter Bale, camera: Roger Jackman	Awards: 6th international film festival Montana, best of festival; best professional film, special merit award for the advancement of scientific achievement of scientific knowledge through cinema

9.82	*Wildlife on One: The Serpent's Secrets*	producer: John Downer, camera: Owen Newman	suggested as first effective us of low wide angle shots for dramatic effect
11.82	*What on Earth?*	featured: David Bellamy, Michael Jordan, Malcolm Coe, Michael Boorer, Sheila Anderson	Wildlife Quiz on BBC2 with AI 65-74, 1.0m, 1.9%

1983 BBC Wildlife Magazine relaunched from Wildlife Magazine

1983	***Nature***	Reporters: Tony Soper, Michael Buerk, Jeremy Cherfas, Brain Leith, contributors David Bellamy etc. producers: Robin Hellier, John Sparks, Andrew Neal	BBC2 environmental programme. Changed format from a magazine type programme to single features, NHU to features, and back. The name disappeared for a while and is now back as one offs.

1.83	series 1	magazine series
1984	series 2 and 3	magazine series
3.85	series 4	ratings AI 80-86, 2.8-3.1m, 5.1-5.9%
2.86	series 5: Gorillas	AI 86 7.2m 4.2%
3.86	series 5: Red rag to the EEC	AI 82 1.5m 2.9%
3.86	series 5: Murky Waters	AI 85 5.3% 2.7m
3.86	series 5: Forty Winks	2.9m 5.6%
3.86	series 5: Wild London	AI 78 5.4% 2.8m
4.86	series 5: Kingfisher and Saline solution	AI 80 5.3% 2.7m
4.86	series 5: Chemical check out and Duneblasters	AI 80 4.7% 2.4m
4.86	series 5: Red and blue make green	AI 80 3.7% 1.9m
5.86	series 5: Voracious stars	AI 81 3.2m 6.3%
5.86	series 5: Acorn Watch	AI 84 2.7m 5.3%
6.86	series 5: Devious Ducks	AI 83 4.4% 2.3m
6.86	series 5: Bugged Ducks	AI 83 2.7% 1.4m
6.86	series 5: Clarion call	AI 86 1.4m 2.7%
2.88	series 6	AI 76-82, 2.3m-3.1m
2.89	Series 7	
3.90	series 8	
3.91	series 9: Car Crazy	
3.91	series 9: Raiders of the Lost Orchid	
3.91	series 9: Look who's talking	
3.91	series 9: The fourth hurdle	
4.91	series 9: A drop to drink	
4.91	series 9: no time to waste	
4.91	series 9: A wolf in sheep's clothing	
4.91	series 9: The gulf coming clean card index incomplete	
1994	Nature Specials:	
	Gorillas	AI 85, 3.2m
	Galapagos	AI 78, 1.3m
1995	Urban Trees	

1983	*Birdwatch in the Camargue*	Tony Soper, Roger Lovegrove	maximum 8.4% 4.4m AI 84
1983	*Cameo*		third series
1983	*Nightlife*		programme with the first stereo soundtrack
1983	*Birdspot*		second series
4.83	*Discovering Birds*	education and NHU	shown on BBC2
5.83	*Wildlife on Two*	producer: Derek Anderson	repeats of *Wildlife on Ones* shown at peak time on BBC2
7.83	*World of Wildlife*		series of brought in films from abroad
7.83	*Birds of Britain Series*		weekly slot of short films on British birds that ran for several months
9.83	*The Making of a continent*		series on the making of North America shown on BBC2, BBC/WTTW Chicago co-production
10.83	*The Natural World*	Series editors: Peter Jones, John Sparks, many early ones narrated by Barry Pain	50 minute slot on BBC2 for blue-chip natural history films that is still running.
11.83	*Wildlife on One: Aliens from Inner Space*	producer: Keenan Smart, series producer: Peter Bale, camera: Paul Atkins, Mike de Gruy	film on cephalopods or cuttle fish. Awards: Chris Bronze plaque at Columbia film festival; 8th international wildlife film festival in Montana, honourable mention; animal behaviour society film award to Roger Hanton and BBC; red ribbon award at the American film festival, New York. AI 85, 15.5%, 7.9m
12.83	*World About Us: The Forgotten Voyage*		*World About Us* special on the story of Alfred Wallace, 3.6% 1.9m AI 82
12.83	*Rainbow Safari: Wildlife in Colour for Christmas*	presenters: David Attenborough, David Bellamy, Andrew Sachs producers: Frank Riches, Marion Zunz	the secrets of animal colours, a Christmas special on BBC1
1984	*The Great Tit Watch*		specially shot for the BBC, shown on BBC2
5.84	*You can't see the Wood*	presented by David Bellamy	shown on BBC1 6.40-7.05pm, David Bellamy continued to front series through the 1980s, most coming from continuing education.
1984	*Birdwatch - live from the river Exe*		

1984	*The Living Planet*	narrator: David Attenborough, producers: Ned Kelly, Andrew Neal, Ian Calvert, Richard Matthews, Adrian Warren, Executive producer: Richard Brock, camera includes Read Morley and Martin Saunders	The Second 13 part mega series focusing on biogeography shown on BBC1. Awards: Best script (David Attenborough) Wildscreen '84; 1985 Bafta Craft award for film sound to Lyndon Bird, David Old and Keith Rodgerson; US prime Time EMMY for most outstanding information series; Christopher Award (1986); Conservation Award Wildscreen '84 (for programme 12), co-production Time Life. figures AI 93, 7.9-11.6m, share 15.4%-22.5%.
1.84	*Zoo 2000*	presenters: Dr. Jeremy Cherfas, George Inger	looks at the relationship to wildlife and the history of zoos
1985	*Birdwatch live from the Farne Islands*	presenters: Tony Soper and Peter Hawley	audience figures 11.7% 6.0m
2.85	*Monkey business*	chair: Henry Kelly	quiz show on peak time BBC, example figures AI 41, 6.7m 13.1%
4.85	*Bird Brain of Britain*	presenter and camera: Simon King, producer: Mike Beynon, director: Alastair Fothergill	AI 87 13.1m, Simon King had previously worked with John King, producing natural history programmes from Birmingham
6.85	*Oddie in Paradise*	presenter: Bill Oddie camera: Heinz Sielmann productions, producer: Richard Brock	programme on Bird watching in Papua New Guinea shown at peak time 7.35-8.00 on BBC1
7.85	*Wildlife Showcase*	George Inger	first series of the showcase on BBC 2 which shows bought in films from abroad
1985	*Kingdom of the Ice Bear*	producer: Mike Salisbury, director and camera: Hugh Miles, narrator: Hywel Bennett, series editor: Peter Jones, producer Mike Salisbury	*Natural World* Special shown on BBC1, milestone mini series that took 3 years to make on the wildlife of the Arctic. Awards Cherry Keaton medal for wildlife photography in the Arctic; 9th International Wildlife film festival in Montana best television, merit award for cinematography, and sound effects; Wildscreen best photography, Chicago international film festival best educational film.
1986	**All BBC commercial activities brought together in BBC Enterprises Ltd. Peacock Report on financing the BBC published**		
1986	*A Day in the Life*	camera: Chris Packham, producer: Keith Scholey, Moira Mann, series editor: Mike Beynon	Children's series located in and around Bristol shown on BBC 1 at 4.30pm
1986	*Birdwatch live from Florida*	presenter: Tony Soper, producer: John Dobson	maximum figures 6.3m 13.3% AI 84

1986	*Birdwatch live from Martin mere*	presenters: Tony Soper and Roger Lovegrove, director: Paul Appleby, producer: John Dobson	
1986	*Living Isles: a natural history of wild Britain*	series producer: Peter Crawford, director: Mark Jones, presenter: Julian Pettifer, producer: John Downer	used techniques pioneered in Life on Earth and Living Planet to look at British wildlife advised by the countryside commission and NCC, produced one of the most popular tie in books, AI 87-90, 7.4m-9.0m, share 14.4-17.6%
1986	*(King's Country)*	presenter and camera: Simon King, producer: John King	produced by Big John Enterprises, films of the landscape, habitat and animals of the south of England.
1986	*Bird Week - from Slimbridge*	presenters: Tony Soper, Nick Davies, Chris Packham, Peter Scott and David Attenborough	A week of outside broadcasts from Slimbridge on the achievements of the wildlife reserve
1986	*(Animal Squad)*	producer: Paul Berrift	Animal rescue type programme from London features
1.86	*Wild Flower Series*	producer: Sara Ford, presenter: Michael Jordan, camera: Alan Hayward	Series of 10 minute shorts shown at 8.10 to 8.20pm
1.86	*The Really Wild Show*	presenters: Nic Davies, Chris Packham, Terry Nutkins, Michaela Strachan	Children's natural history programme that runs a series in the spring each year and is still running on BBC1, uses a mixture of studio features and games, graphics, specially shot material stock and library footage
7.86	*Wild Britain: the video eye on Britain*	producer: Mike Beynon, presenter: Michael Jordan, Nick Davies, Peaches Golding, assistant producer: Paul Appleby, Director: Kathryn Wolfe	magazine series on British wildlife shown on BBC1 6.05 to 6.30pm
7.86	*Wildlife Showcase*		second series of showcase of overseas films
8.86	*Vanishing Earth*	narrator: Sue MacGregor, producer: Mike Andrews, Series editor: Peter Jones	*Natural World* Special on BBC2 on the environment, focusing on the soil and water. co-pro WGBH, Boston UNEP. Awards New York television festival 1986 Golden medal, Prix Italia award 1987
9.86	*Birds for all Seasons*	narrator: Magnus Magnusson, series editor: Jeffrey Boswall, producer: Andrew Warren	global celebration of birds

9.86	*Pet Watch*	producer: Roy Chapman	shown on BBC 1 6-6.30pm, programmes
8.86	*The Making of a Continent*	writer and narrator: Barry Paine, producer: Ned Kelly, director: Ian Calvert, series editor: Peter Jones	second series on North American geological development, winner of BAAS, American Geological Institute Peabody awards
10.86	*World Safari*	presenters: David Attenborough, Julian Pettifer, Stephanie Powers, Heinz Sielmann, Duke of Edinburgh, Rajiv Gandhi, Sir Peter Scott, Tony Soper, Thor Heyerdal, executive producer: Peter Crawford	live "safari" transmitted throughout the day, compilation shown 8-9.30pm on BBC2 5.3% 7 mill AI 89, world audience estimate at 100 million
11.86	*Television and Natural History*	producer: Sue Bourne, writer and presenter: Desmond Morris	part of the TV50 series
12.86	*Wild World*		Daytime television series on BBC2 that showed mostly old *World About Us*, some *Natural Worlds* and some *Wildlife on One*, running up to the 1990s
1987	*Wildlife on One: In-flight movie*	producer: John Downer	*Wildlife on One* programme featuring footage flying with habituated birds, winner of several awards including two craft awards at 11th International film festival, a craft award at Wildscreen
1987	*Cameo*	producer: Keith Scholey, camera: Hugh Maynard, Rodger Jackman, narrator: Douglas Leach	series four
1987	*Daylight Robbery*		programme following on from bird brain of Britain to feature animal challenges
1987	*Birdwatch goes Dutch*	presenters: Tony Soper and Nico de Maan	maximum AI 86, 4.2m
1987	*(The Animal Roadshow)*	presenters: Sarah Kennedy and Desmond Morris, producers: Ian Christies, Charles Nairn	series produced by BBC Scotland that explores relationship between people and their animals
1987	*First Eden*	writer and presenter: David Attenborough, executive producer: Andrew Neal	another major series tracing the influence of civilisation on the Mediterranean region, shown on BBC2, co-productions with ABC, WQED, Pittsburgh, PBS
1987	*In the Shadows of Fujisan*	narrator: by Peter France, producer: Pelham Aldrich Blake	bought in series on the role of animals in Japanese art and religion shown on BBC2, 2.4m RI 80

1.87	*Wildlife on One: Meerkats United*	producer: Marion Zunz	reputedly the best known wildlife film ever, runner up at the 10th international film festival in Montana, Wildscreen 1988 award for overall excellence
3.87	*(Simon King's Country Diary)*	Simon and John King	Wildlife of the Southern Landscapes produced by Simon and John King
4.87	*Only One Earth*	presenter: Sue Cook, producer: R. Keefe	Awarded television ecology special mention at Prix Italia 1988, transmitted at peak time on BBC2
5.87	*Wild Britain*	presenters: Nick Davies, Peaches Golding, Mike Jordan, producer: Mike Beynon	second series of programme on British Wildlife 5.35-6.00pm on BBC1 example figures AI 80, 5.0m
7.87	*Wildlife Showcase*		third series of overseas films
9.87	*Miniature Worlds*	narrator: Peter France, camera: Alan Hayward, producer: Dilys Breeze, Director: Nigel Marvin	shown on BBC2 in peak time, 10 minute shorts using macro studio shot in and around London.
11.87	*Zooweek*	producer: Robin Hellier, Director: Steve Poole, presenters: Jeremy Cherfas, Nick Davies, Mike Jordan	Live watch from London Zoo, compilation as Zoowatch AI 82, 7.1m
12.87	*Okavango: Jewel of the Kalahari*	brought in from Partridge films	3 part special in *Natural World* series. Winner of 1988 Wildscreen Golden Panda
4.88	*The Nature of Australia*	Narrator: Robin Williams, producer: David Parer	bought in series on Australian wildlife, shown on BBC2, won special award at Wildscreen
5.88	*Reefwatch*	presenter: Tony Soper, Martha Holmes, Luke Decruy, Eugenie Clark assistant producer: Alastair Fothergill, producer: Robin Hellier	livewatch programme transmitted 4 times during the day with ratings from 1.2m to 10.6m and AI from 83-90 with live broadcasts from the Red Sea Reef, using bubble helmets to allow live commentary underwater, co-production with Discovery
7.88	*Wildlife Showcase*		fourth series of overseas films on BBC2
1988	*The Great Rift*		series on the formation and evolution of Africa, co-productions with WNET in USA, Network 7 in Australia, Max 4.7m AI 87
12.88	*Tiger on the Tiles*	producer: Mike Beynon, presenter: Desmond Morris	Desmond Morris catwatching on BBC1 figures AI 83 7.9m
1988	*The Wolf in your Living Room*	presenter: Desmond Morris	Desmond Morris dogwatching on BBC1

12.88	***Supersense***	writer and producer: John Downer, narrator: Andrew Sachs	series on animal perception, co-prod Coronet USA, ABC Australia. Winner of best international documentary series at the 12th Annual National network awards for cable excellence; four merit awards at 12th International Wildlife film festival Missoula; EMMY nomination, various other educational and craft awards.
	1. Sixth Sense 2. Seeing sense 3. Sound Sense 4. Super Scents 5. Sense of timing 6. Making sense	AI 83, 10.3m	
1.89	*The Making of Supersense*		
1989	**Launch of Sky Television and British Satellite Broadcasting, who later merge**		
1989	*Lost Worlds, Vanished Lives*	presenter: David Attenborough	David Attenborough series on fossils
1989	*Africa Watch*	director: Roy Chapman, producer: Robin Hellier, , presenter: by Fergus Keeling, Julian Pettifer, Jonathan Scott.	live broadcast taken to the Masai Mara Reserve in Kenya using 3 satellites and 90 people, highest ratings 2.4 million, AI 88, NHK co-production
1.89	*Atlantic Realm*	producer: Roger Jones, narrator: Martin Jarvis, series editor: Andrew Neal	series on the natural history of the Atlantic Ocean.
1989	*Birdwatch: The Great British Birdwatch*		
11.89	*Go Birding*	producer: George Inger, Robin Prytherch, presenter: Tony Soper	BBC 2 series on practical bird watching
8.89	*Wildlife Showcase*		fifth series of overseas films
11.89	*The State of Europe*	presenter: Michael Buerk, Producer: Peter Salmon	Nature Special on the state of the environment in Europe, winner of three awards
1990	*Land of the Eagle*	executive producer: Peter Crawford, narrator: Alan Eveira, producer: Steve Nicholls	followed the trail of American settlers and their interaction with the indigenous people and their wildlife on BBC2
1990	*Global Detective*		Nature Special from the Natural History Unit. Winner of Wildscreen conservation award, and Award at Jackson Hole

1990	*Badgernight*	presenters: Sally Magnusson and Jessica Holm, producer: Mike Beynon, director: Roy Chapman	habituated animals to television lights enabling pictures of unprecedented quality
1.90	*Survivors: a new view of us*	executive producer: Richard Brock, narrator: Brian Gear	peaktime series on animal's battle for survival and interaction with people series on BBC1 8.30-9.00pm
7.90	*Wildlife Showcase*		sixth series
10.90	*Trials of Life*	writer and narrator: David Attenborough, executive producer: Peter Jones, film editor: Jo Payne, producers: Keenan Smart, Marion Zunz, Mike Gunton, Alastair Fothergill, 40 cameramen	12 part series that focused an animal behaviour on BBC1, co-production with Turner Broadcasting, cost £4 million. Full co-production struck in 1986 with WTB of US, ABC Australia, Partnered by NRK Norway, SVT Sweden, Finland YLE, WDR Germany, ORF Austria, RAI Italy, RTVE Spain. repeated in 1995, winner of various awards including a Bafta
1991	**Charter Review Task Force begins work**		
1991 BBC1	*Lifesense*	narrator: Andrew Sachs director and producer: John Downer, production: Steve Nicholls. Used many different cameramen	series on animal perceptions of humans, co-production Lionheart Television International Inc.
1991	*The Birth of Europe*	presenter: David Attenborough, series producer: Mike Andrews	historical ecology exploring the way that the structure of the continent has shaped the history of settlement and civilisation
1991	*Sea Trek*	producer: Robin Hellier, presenters: Martha Holmes, Mike De Gruy	sea trek to the Galapagos Islands, Caribbean, kelp off California, Great Barrier reef, Hawaiian Islands, co-production with National Geographic, winner of three awards at 16th International wildlife film festival Montana
9.92	*The Velvet Claw*		series on the evolution on carnivores, co-production with Lionheart, winner of merit award at 16th International Film Festival Missoula
11.92	*Realms of the Russian Bear*	producer: John Sparks, film editor: Ron Martin, presenter: Nikolai Drozdov	the Natural history of the former Soviet Union, co-production with WNET/13, repeated in September 94, winner of Jackson Hole best limited series award, a number of awards at 16th International wildlife film festival in Montana
1992	*Living Dangerously*	narrator: various personalities including Richard Briers, producers: Richard Brock, Barry Paine	series on animal characters and environmental stress shown on BBC1

1993	**Start of Producer Choice at the BBC, ITV franchises are redistributed on an aggressively commercial basis**		
1993	*Nature by Design*		series comparing human design with evolutionary adaptations in nature, making extensive use of graphics, average AI 74, 1.3m, 6%
1.93	*The Natural World: Echo of the Elephants*	producer: Marion Zunz	blue-chip programme that follows a group of elephants, award winner at Jackson Hole and Wildscreen
1993	*Savage Paradise*	camera: Hugo van Lawick	bought in series about African wildlife
5.93	*Night shift*		3 programmes of a live outside broadcast at night. The first live wildlife genre made without OB facilities as part of the Bristol site
8.93	*Nature Detectives*	presenters: Chris Packham, Simon King and others, series producer: Paul Appleby	first series of 6 programmes on British wildlife enthusiasts, ran for three series in the summer on BBC1, with the last series in 1995, average AI 79, average figures 6.5m, 30%
7.93	*Life in the Freezer*	narrator: David Attenborough, executive producer: Alastair Fothergill, directors: Martha Holmes, Peter Bassett, Ned Kelly, camera: Doug Allen, Paul Atkins, Stephen de Vere, Michael De Gruy, Simon King, Ian Marthy, Peter Scoones, John Tolson, Hugh Maynard and Hugh Miles	average ratings 9.8m AI 84, won Documentary award at the US EMMY 1994, co-production National Geographic, Lionheart international Inc. Awards at the International film festival, Montana; winner of Bafta, Grand Prix in Paris and best film at Jackson Hole
1993	*Living Dangerously*	series producer: Richard Brock, director: Andrew Jackson. Narrators: included Ian McShane, Rula Lenska.	second series featuring environmental stories from the point of view of the animal, average AI 78, 6.6m 30%
1994	**Merging of Wildscreen film festival and BKSTS Symposium**		
1.94	*Tiger Crisis*		special investigating the threat to Indian tigers, AI 81 2.7m, 13%. Best of festival at 17th International Wildlife film festival, Missoula
1.94	*Nomads of the Wind*		the story of the Polynesian expansion across the South Pacific combining natural history with social history and re-construction, average AI 80, average audience 3.2m, 17%

6.94	*(Tracks)*	presenters include: Simon King and Raymond Mears	nostalgic look at the British countryside from BBC in Birmingham
6.94	*Beach watch*	presenters: Sheila Anderson, Simon King, Chris Packham, Howard Stableford, camera: Rod Clarke, Jeremy Humphries, Peter Scoones, Alan Hayward, Ian Stacey, producer: Sara Ford	live broadcast of seals and terns from Blakeney Point on the north Norfolk coast Spring 1994.
7.94	*The Human animal*	presenter: Desmond Morris, producer: Mike Beynon	Natural history of the human species shown on BBC1, ratings averaged about 6 million, except for 12.5 million for the one on sex, average AI 78
9.94	*Savage Paradise*		three part series on lions in the Ngorongoro crater, flamingos in the soda lakes, and elephants in Botswana on BBC1
10.94	*Wildscreen '94*		special featuring highlights from the wildlife film-making festival, 2.1m, AI 87
10.94	*Natural Neighbours*		series about the relationship between humans and other animals, shown on BBC1 at 8pm, average AI 83, 5.3m, 21%
11.94	*Wildlife Showcase*		another series of overseas films
11.94	*Wildlife Classics*		series of repeats on Sundays on BBC2 of wildlife classics
1994	*Really Wild Guide to Great Britain*	Reporters: Jacquie Acquan, Chris Packham, Michaela Strachan, Homie Watkins	family show on British Countryside, in magazine format
1994	*A bird in the nest*	presenters: Peter Holden, Simon King, Bill Oddie, director: Roy Chapman, Hilary Jenkins	more live watch from spring nests with 35 visits over a week.
1.95	*The Private Life of Plants*	writer and presenter: David Attenborough, series producer: Mike Salisbury	mega series on plants struggle for survival animated through extensive time lapse photography, co-production with Turner Broadcasting Systems inc., shown on BBC1, average audience 7.3m, AI 88. Award for innovation at Jackson Hole
2.95	*A Wild Romance*		a humorous look at natural couples in conjunction with valentine's day

2.95	*Flamingo Watch*	producer: Sara Ford. executive producer: Robin Hellier, presenters: Chris Packham, Simon King, Jonathan Scott.	live coverage of flamingos in Kenya's Rift Valley soda lakes, co-production with Turner Broadcasting providing the satellite link, TBS/Audubon Society and BBC enterprises, shown on BBC2
2.95	*(Animal Hospital)*	presenter: Rolf Harris	series from features on the wards of Harmondsworth animal hospital, shown on BBC1 at 8pm on Thursday, the traditional slot of *Wildlife on One*, three further series shown to date and still going strong
4.95	*Great White Shark*	producer: Keith Scholey	wildlife special on the shark on BBC1 over Easter
4.95	*The Egg*	presenter: Keith Floyd	humorous Easter special looking at the egg
5.95	***Watch Out***	series producer: Mike Beynon, presenter: Simon King	10 minute natural history series on BBC2 which gives the latest details on where and how to see wild animals and plants around Britain, that ran over the summer 1995, and part of summer 1996, also active on Ceefax and the internet.
5.95	*The Man who Built the Ark*		tribute to Gerald Durrell
7.95	*Hot Shots*	presenter: Simon King, producer: Paul Appleby	ten minute shorts on wildlife filming techniques
7.95	*Wildlife Showcase*		another series of overseas films
7.95	*(Africa's Big Game)*	producer: Brian Leith	film from Scorer Associates on wildlife conservation in Africa
8.95	*Nightmares of Nature*	commissioned from Zebra films	first series bought in by the NHU from an independent, that featured a mixture of drama reconstructions and wildlife footage to explore the perceived and actual dangers of wildlife, shown on BBC1
9.95	*(A Week at the Zoo with Rolf)*	presenter: Rolf Harris	daily live transmissions from London Zoo and Whipsnade from features
11.95	*A Nose through Nature*	presenters: Vic Reeves and Bob Mortimer	one off special in association with children in need, raising money through a smell-o-vision book
1.96	*The Natural History Programme Anniversary Special*		fifty years of natural history broadcasting
2.96	*The Web*		interactive global internet experience that links children around the world

2.96	*Alien Empire*	series producer: Steve Nicholls	series featuring insects, stunning photography and graphics, shown on BBC 1
5.96	*Winners and Losers*	series producer: Richard Brock	2 part programme revisiting the animals filmed by Eugen Schuhmacher in 1959 to determine the winners and the losers
5.96	*Postcards from the Country*	presenter: Richard Mabey	series looking back to the changes in the countryside and country living, shown on BBC2
7.96	*Dawn to Dusk*	presenter: Jonathan Scott, producer: Robin Hellier	series that visiting wildlife reserves in Africa, with local experts leading Jonathan Scott to the animals that he can see from dawn to dusk, shown on BBC1 at 8pm
7.96	*Cartoon Critters*		children's series mixing animated animals and natural history footage
8.96	*Back to the Wild*		series showing behind the scenes at the RSPCA's West Hatch wildlife hospital, shown on BBC1 at 8pm
9.96	*Big Cat Diary*	presenters: Simon King, Jonathan Scott	four camera crews follow weekly events in the lives of lions, cheetahs and leopards in the Masai Mara, trailed as the first true life diary of totally wild animals
10.96	*Twenty first century fox*	presenter: Julian Pettifer	discovering the truth about foxes from farmers, hunters and game wardens
11.96	*Heading South*	presenter: Simon King and Chris Packham	three programmes taking an interactive look at bird migration, culminating in a day of live broadcasts
1996	**John Birt announces a revolution in programme-making, putting TV and radio together in bi-media Broadcast and Production directorates**		
forth-coming	*David Attenborough specials*	introduced by David Attenborough	series of specials on charismatic carnivores
	The Life of Birds	presenter: David Attenborough	ten part series on birds

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