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What Gets Left Behind for Future Generations? Reproduction and the Environment in Spey Bay, Scotland

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What Gets Left Behind for Future Generations? Reproduction and the Environment in Spey Bay, Scotland

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Abstract

Based on fieldwork with people involved in the environmental movement in Scotland, this article describes the connections they made between the future of reproduction and the future of the environment. While we are used to thinking of Euro-American kinship in terms of the passing on of biogenetic substances, in this case an ecological ethic of reproduction, which places the emphasis on considering the kinds of environments that children will be born into, is more salient. An ecological ethic of reproduction urges (potential) parents to consider whether it is responsible to bring future generations into a world with stretched and unequally distributed resources and in which the accumulated consequences of human actions may be not only altering the natural world, but also the ability to reproduce at all.

Keywords: kinship; environmentalism; reproduction; future; Scotland; endangerment

Between late 2005 and summer 2007, I conducted fieldwork in a tiny village called Spey Bay on the Moray Firth coast in northeast Scotland, amongst the people who work and volunteer in the wildlife centre there. The Moray Firth has a resident population of over one hundred bottlenose dolphins and sightings of dolphins, seals, porpoises and minke whales are common in the summer months. Although they are aware that cetaceans are wild animals, the people who work and volunteer at the wildlife centre think of them as intelligent, social and generally kind-spirited; they represent what is good about the natural world and the ethical imperative to conserve and protect the environment (see also Dow 2016). The staff and volunteers of the wildlife centre in Spey Bay have placed themselves in the role of caring for these animals, and by extension the wider environment. Along with their specific interest in cetacean conservation, they are influenced by the environmental movement, which compels them to reduce their carbon emissions, recycle their waste and consume products that have been produced and traded fairly in their everyday lives.¹

In this article, I will focus on people in Spey Bay's visions of the future, and specifically, the place of reproduction in the future. As they recognise, while access to food and a safe environment to live in are of course crucial to individuals' survival, the endangerment and extinction of species is ultimately caused by the failure to reproduce future generations. In the article, I will trace some of the connections people in Spey Bay made between reproduction, time and the environment, focusing particularly on their concerns about infertility and endangerment. In thinking about the present and the future, people considered what the best thing is to do with natural resources, how best to manage natural drives and what we do with things that humans have produced. In other words, when people in Spey Bay thought about the future, they worried most about what gets left behind for future generations. Running through all this are their ideas about the cumulative effects of human actions on the natural world and a view of the future as the accumulation of past and present events, decisions and actions.

People in Spey Bay think of having children less in terms of the inheritance of biogenetic substances and more in terms of ensuring a stable environment in which future generations can lead safe and healthy lives. I will call this an ecological ethic of reproduction. It is a model of kinship in which reproductive ethics are primarily about critically assessing what kind of world any future child will grow up in. Rather than prioritising a molecular perspective on the creation of new lives, which might be expected when discussing reproduction in the UK in the twenty-first century, then, it

draws the focus out to the environmental scale – asking not whether a particular constellation of sperm, egg and uterus will create a baby, but whether a person born in the future will be able to make a good life.

Making Connections

As Marilyn Strathern (1992a, 1992b; see also Bowlby 2013) has established, in British kinship thinking in the late twentieth century, children were the future to their parents' past. Kinship and reproduction have been characterised by questions about the future, including the inheritance of property, the solidification of lineages, the passing on of genes, blood and other bodily substances and the transfer of memories, artefacts and stories from one generation to the next. In British kinship, reproduction entails the downward, future-oriented flow of these myriad inheritances from past and present generations to the next (see also Carsten 2001).²

This common sense connection between reproduction and the future has, since the late twentieth century, most audibly manifested itself in public debates about assisted reproductive technologies (ART), with many early examples characterized by questions about what kind of future we might unwittingly create through tinkering with life itself (see Edwards et al 1993; Mulkay 1997). Many scholars of ART have pointed out that one of the revolutionary things about these technologies is that they have brought the previously private matters of marital relations, reproductive health, fertility and parenting into the public domain, though this is also within a context of shifting family structures and kinship norms. But, these debates also touched on much wider questions. For example, in his interviews with people about the potential future of ART in the 1990s, Eric Hirsch (1993) found that, in working out the likely effects of these technologies, people drew on the domains of the state and market exchange, which contrasts with the sense that a separation of family from such 'public' spheres is characteristic of modern life.

In her most recent book, *Biological Relatives*, Sarah Franklin (2013: 300-305) discusses the long history of anxiety about technology being coupled with fears about the future of reproduction. She illustrates this using the case of Plato and Socrates' dismissal of the 'sterile' and 'barren' technology of writing. This ancient example of Plato and Socrates' mistrust of writing shows the ambivalence that technology commonly provokes and how vital ideas about time, progress, kinship

and inheritance are to that ambivalence. Ambivalence about technology parallels ambivalence about the future: 'It is the fear of degeneration in the wake of technological change, set against a more confident expectation of an improved, more fruitful, future, that has long characterized technological ambivalence', she writes (2013: 300). One of the most striking characteristics of these fears is how quickly they turn to questions about the future of kinship and fertility. It may seem obvious that ART would provoke concerns about kinship, since many have supposed that this is what they are all about, but Franklin makes the important point that this relationship between technology and kinship is not unique to ART – it may even apply to something as (now) banal as writing. Similarly, when people worry about the future of kinship and reproduction, they may be concerned about much more than family.

By positing a crisis on the global scale in which every single person is implicated, environmentalism makes connections across, and thereby potentially renders meaningless, the boundaries around domestic, local, national and natural worlds. This is its power and its challenge. British people's concerns about human interventions in both the environment and reproduction suggest radical consequences for the concept of nature and its ability to act as the ultimate context. At the end of the twentieth century, as Strathern (1992a) has pointed out, it seemed that interfering with nature by manipulating embryos *in vitro* or destroying the rainforests could have epochal³ implications: human interventions, whether at the microscopic or the industrial scale, put nature's status and its future in question. Fears about the destruction of the natural world were not only potentially catastrophic in a practical sense, but had enormous conceptual ramifications, as they created a sense that nature might not be as all-encompassing or powerful as modernist thinking had assumed.

Despite these predictions about the effects of ART and environmental destruction on nature, what was less clear at the end of the twentieth century is what effect environmentalism might have on kinship. In an ecological ethic of reproduction, the importance of biogenetic substance in creating relatedness is still assumed and the universality of the desire to have a child 'of one's own' goes unquestioned, but the main concern is whether it is responsible and ethical to bring children into a world that had been severely damaged by human actions and which has stretched, dwindling and unequally distributed resources. An ecological ethic of reproduction is one aspect of a worldview in which humans are part of an interdependent and

biodiverse environment, that cautions that straying too far from nature is dangerous for everyone and which conceptualizes parental responsibility as reaching beyond the individual parent or nuclear family to whole communities and societies which create the conditions into which children are born. This article attempts to both describe how this reproductive ethic is manifested in Spey Bay and to suggest its wider implications for our understandings of kinship, reproduction, time and the environment – and how they might be connected.

In my fieldwork in Spey Bay, I followed Strathern's (1992a) approach of tracing analogies and connections, paying particular attention to the ways in which analogy compels action (Street and Copeman 2014). Analogies cross boundaries and show no deference for scale. It behoves anthropologists to focus on these apparent transgressions, since they can make our ways of knowing visible. In talking about reproduction, people in Spey Bay made connections between different worlds and they considered the ramifications of such connections. In conversations about reproduction, they discussed kinship, relatedness and family, but also non-human animals, industry, government, the state of the natural world and the future of humanity. People in Spey Bay did not only worry about their own children or grandchildren, but also about unknown and not yet conceived future generations, including those of other species.

Along with this attention to the ways in which people make connections across domains, it will become clear that there is some slippage in the kinds of environments that people in Spey Bay are concerned about in relation to reproduction. They are, certainly, explicitly informed by environmentalism and concomitant concerns about 'the environment'⁴, as in that which surrounds all species and provides the habitat and resources upon which we rely for survival, but they are also concerned about other environments. Their anxieties about the future of reproduction are about the domestic, economic, social, political and ecological environments in which future generations will live. This is on the one hand a reflection of the capacious nature of the term 'environment', but it also indicates the fact that environmentalists are attentive to the interactions between these different environments. In other words, they are particularly concerned about the effects that humans have on the natural world and so are attentive not only to the state of the ecological environment but also human society. As I will show, thinking about the relationship between reproduction and the environment is a reflection of the interdependence between humans and the natural world that people who are

concerned about the environment perceive. By following the promiscuous connections people in Spey Bay made between different domains of life, I will show their sense of the connectedness of humans and their environments, as well as the centrality of reproduction to how they think about the future. Before focusing my attention squarely on the reproduction of future generations, I will give a sense of what everyday life in Spey Bay is like with specific reference to the problem of the proper management of waste, illustrated by the examples of public beach cleaning and household recycling.

Caring for the Environment

The people who I worked with in the wildlife centre in Spey Bay, their friends and family, ranged in age from their late teens to sixties. Some had grown up in the area, but most had grown up elsewhere in Scotland or England and a few were from Western Europe and North America. While some volunteers come to Spey Bay only for a set period of time, everyone saw it as a place in which they could build a good life and many of the permanent staff in the centre are former volunteers who have decided to settle in the area. The thirty or so houses that make up Spey Bay sit along a road that heads north then, just before it reaches the sea, turns left to a dead end which becomes the wildlife centre's car park. Beyond that, is the mouth of the River Spey. The wildlife centre is based in a complex of buildings, now owned by the Crown Estate, which once housed a successful salmon fishing station that operated between the eighteenth and twentieth centuries.⁵ In the 1990s, a local couple converted some of the buildings into a wildlife centre aimed at locals and tourists. Later that decade it was taken over by an international conservation charity, which still runs the centre as its flagship national site for advocacy, education and fundraising.

While the people who work and volunteer in the wildlife centre are those most obviously involved in the environmental movement in the area, I had many conversations with visitors to the centre and other locals who are concerned about the environment and climate change. Although they might not all identify themselves as environmentalists, living 'close to nature' seems to compel people there to think about their relationship to their environment. This has gone alongside the mainstreaming of environmental ideas and values in the last few decades. Indeed, the Scottish Government included a pledge to pursue environmentally friendly

policies in its draft constitution for a potential independent Scotland (Scottish Government 2014).

Caring for the environment is popularly perceived (and sometimes derided) in Britain as a middle-class concern and most of the people who work in the wildlife centre are middle-class. There is certainly congruence between their core ethical values – taking responsibility, planning for the future and making good lives – and their own socio-economic positions, but this popular association of environmentalism with a certain class also overlooks the foundational role that many more marginalised groups have played in the environmental movement (see Taylor 2011 on environmental justice and environmental racism in the United States; see also Klein 2014 for numerous examples of indigenous peoples' battles against environmental exploitation). One important aspect of caring for the environment entails recognizing that everyone will be affected by climate change, but that its effects will be unevenly distributed and that those best resourced to cope also have the most power to prevent it.

The wildlife centre in Spey Bay holds regular beach cleans on Sunday afternoons. Beach cleans represent a crucial opportunity to educate visitors about the anthropogenic pressures faced by marine creatures and their environments. At the beginning of the beach cleans, staff give the participating adults and children protective gloves, litter picks and tips about what to look out for as they comb the shoreline for human-made debris. The rubbish is collected together further up the beach, to be sorted by staff and later removed by the local council. When they have finished collecting, participants are faced with piles of car tyres, innumerable types of plastic, rope and netting, glass bottles, cans and plenty of other more unusual finds besides. At this point, wildlife centre staff point out what the presence of all this rubbish might mean for the species that live in the sea. They tell children that turtles and whales often eat carrier bags, mistaking them for squid or jellyfish and that dolphins and fish can get entangled in abandoned fishing nets. Through this example, they show them the consequences of careless waste management, or what gets left behind. They remind them not to drop litter, especially in parks and nature reserves. They encourage adults to recycle their household waste and to use reusable fabric shopping bags rather than plastic ones. Finally, they thank them and congratulate them on the important job they have done and remind them about the generous servings of cake on offer in the wildlife centre's café.

Twenty-first century environmentalism is, in many ways, a contemporary reworking of the Green movement(s) of the 1970s and 80s, fitted to a context of globalisation and neoliberalism. The beach cleans in Spey Bay exemplify the close connection between consumption and the environment and the assumption that educating people, especially children, about the effects of waste on the environment will bring about a change in their behaviour. Over the decades, environmental discourse has sometimes been explicitly anti-capitalist and anti-consumerist, yet most people who care about the environment not surprisingly find it impossible to extricate themselves from capitalism in their everyday lives. For many twenty-first century environmentalists in an era of advanced capitalism, a more pragmatic way of framing the argument is to focus on questions of sustainability (see Uekoetter 2012), although some environmental scientists argue that it is too late to aim for sustainability, saying we should instead be focusing on adaptive strategies and resilience (Benson and Craig 2014).

Activist writer Naomi Klein (2014) has recently called for a global rethink of our political economy, arguing that capitalism and its core 'extractivist' mind-set, in which the natural world primarily represents resources for humans to exploit, is the main barrier to preventing catastrophic climate change. Similarly, David Graeber (2012: 278) argues that efforts to prevent climate change have so far been 'woefully inadequate', because the cosmology of industrial civilisation encourages ecologically unsustainable ways of living. Recycling is a term that originated in oil refining, but came, in the 1960s, to indicate what consumers did with household waste. For Graeber this semantic shift parallels a change in focus from industrial practices to individual responsibilities, bolstered by pre-existing ideas about the morality of waste, saving and degradation, as well as Christian and early scientific ideas about balance and equilibrium. While increasing numbers of people are attempting to live their lives in more sustainable ways, these efforts will ultimately have to be matched by industries and corporations, which produce far more carbon than households anyway.

As the beach clean example suggests, the management of waste is an important part of the everyday efforts that people in Spey Bay make to enact their environmental ethics, though in fact when it came to the management of their own household waste, it raised more dilemmas than it solved. When I first moved to Spey Bay, I lived in the house for residential volunteers, just next to the wildlife centre itself. Residential volunteers were given a food budget by the charity that runs the

centre and they often shopped, cooked and ate together. They usually ordered their food online to be delivered from a local supermarket. While many were uncomfortable with supporting supermarkets, given their reputation for the mismanagement of natural resources and poor treatment of suppliers, they did think that these deliveries were a relatively fuel-efficient means of procuring food in this particular location. Those who had less tight budgets would often substitute and supplement supermarket shopping with items from local independent shops, especially those that stocked organic and Fair Trade brands, when they had the chance.

While living in the volunteers' house, I noticed that the recycling, which was collected in separate bins in the kitchen, would often build up for a long time before anyone dealt with it. At the time, the council did not collect recycling separately from residents' homes, so to prevent it going into landfill, the recyclable waste had to be taken to the nearest designated recycling plant. This was only a few miles away (though off the main road), but far enough to necessitate a car journey to carry the weight of up to seven people's recyclable waste. This raised an intractable dilemma for the volunteers, many of whom felt that regular car journeys to the recycling plant were environmentally unjustifiable. By not instituting household recycling, they thought that the council was being 'lazy' and putting them in an invidious position. Yet, the manager of the wildlife centre, who lived next door, encouraged the volunteers to separate their rubbish, not least because the wildlife centre had to be seen to be encouraging the principle of recycling in its own staff members' behaviour. As the only person living in the volunteer house who owned a car, and as an anthropologist rather than an ecologist, I often took the recycling to the plant myself – to be helpful and because I had a low tolerance for watching it accumulate, especially since the house was prone to rodent infestations. In a sense, I was prioritising our immediate, domestic environment over the health of the natural world. By doing so, I facilitated the volunteers in circumventing some of their qualms about making a car journey, powered by fossil fuels, in order to deal with their waste in a more environmentally friendly manner, though of course it also marked me out – as an outsider, as someone who was prepared to put her environmental credentials to one side in the interests of hygiene, as a car-owner, as ever so slightly uptight.

The everyday ethics of people in Spey Bay might be described using Felix Ringel's term, 'techniques to create a future' (2014: 56), by which he means actions that both allow for present conditions to endure in the future and which hold the promise of

continuity in time. These issues of endurance and sustainability in the future point to questions of hope and despair, which are never far from the minds of environmentalists. But, as their actions bear out, people in Spey Bay clearly do retain some hope for the future, even if only the near future. They fear environmental crisis, rather than expect it. Temporalities of hope are complicated and contextual, but attending to people's hopes is one way of learning what they fear, now and in the future. In public debates about ART and the future of human reproduction, opponents have expressed weighty concerns about what technological interventions into the creation of human life might mean for the future, from charges of Nazi-style eugenics, to a loss of humanity, to the creation of monsters. Environmentalism could be charged with painting a similarly catastrophic picture of the future, though getting caught up in the intensity of such fears – rather than their content – is to miss the point.⁶ These fears are not so much about the end of the world, as what might be lost if one path is taken and not another; they express what kind of world people want now and in the future.⁷

A model of time that seems apt, with some modifications, to people's thinking in Spey Bay is Walter Benjamin's classic description of the angel of history, with its direct reference to climatic chaos and overtones of impending crisis: '...a storm is blowing from Paradise; it has got caught in his wings with such violence that the angel can no longer close them. This storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress' (Benjamin 2007 [1968]: 257-258). Both environmentalism and the reproduction of children are concerned with, and productive of, the future. But, the timelines of reproduction and of environmentalism are not singular. On the one hand, people in Spey Bay believe in scientific theories of evolution and cultural models of progress, but, on the other, they know that the future is the accumulation, rather than the progressive or linear culmination, of the past and present. The 'pile of debris' that the angel faces contains the wrong turns, the sidesteps *and* the leaps forward, all together. But for people in Spey Bay, as he is blown to and fro in the storm, the angel of history is facing forwards and, rather than contemplating the debris of the past, anticipating it in the future.

Reproductive Resources

People in Spey Bay rarely brought up ideas of inheritance in either the sense of phenotype or property when we talked about reproduction and kinship, but they did share the sense that future generations will inherit the environments that we create. This is encapsulated, in a practical sense, by their assumption that parental responsibility begins with planning and creating a 'stable environment' for children to be born into. Erin, who is married with a daughter, used this evocative phrase when describing the ideal conditions in which to become a parent and it eloquently condenses her aspirations and anxieties for future generations, which were shared by everyone I knew. Erin's phrase encompasses the biological, relational, social, economic and ecological worlds, variously and simultaneously indicating a pregnant woman's body, the family home, the landscape, the planet and various other environments in between.

Scotland has the lowest birth rate of the countries that make up the UK and is below 'replacement rate' (i.e. fewer than two children per couple), though this is currently balanced out by immigration (Scottish Government 2010). In my discussions with people in Spey Bay, it became apparent that many were aware of this low birth rate. Rural areas of Scotland have higher birth rates compared to cities and Moray (the county in which Spey Bay is situated) and neighbouring Aberdeenshire have some of the nation's highest rates. According to the Scottish Government (2010), some of this may be 'driven by selective migration of people wishing to start or increase their families from cities to suburban areas as a result of housing market and quality of life issues'. People living in Spey Bay certainly see it as a good place in which to bring up children, and many of their ideas about what makes a good life are coterminous with those about what makes a stable environment in which to parent. Access to beautiful landscapes and fresh air, proximity to the seaside and opportunities to spot rare wildlife were assumed to be beneficial to both children and adults. The fact that young families could afford to live in houses rather than apartments, often with their own gardens, on public and charity sector salaries was also valued.

I asked people in Spey Bay whether they thought the state should have any role in encouraging a higher birth rate in Scotland or whether it should offer incentives for women to have children while they are younger. Generally, people were uncomfortable with state intervention in reproductive decision-making and felt that, given the relatively dense population in the UK as a whole, increasing the birth rate in Scotland was not a major concern. People perceived infertility as a physiological condition which usually had negative effects on people's lives and so thought it fair

and humane to provide access to fertility treatments wherever possible, but many voiced doubts about whether the National Health Service (NHS) should allocate much money to this type of treatment given its finite resources. While they were highly sympathetic to the infertile and the desire to have biogenetically related children, no one thought that having children is a right.⁸

A common idea amongst people in Spey Bay was that there are already large numbers of children without parents or homes in the world and many suggested that people who want to become parents (whether or not they are infertile) should consider adoption. Andrew was a volunteer in the wildlife centre at Spey Bay. He was in his mid-twenties, in a relationship and had no children, though he planned to have them in the future. Although, like everyone I spoke to, he sympathised with the 'natural' desire to have children 'of one's own', he countered this by saying that there is 'huge pressure on this planet in terms of resources' to frame his concerns about whether it was appropriate for people to turn to infertility treatment.

Jenny, whose partner Paul also volunteered at the wildlife centre, similarly described the world as 'overcrowded and over-populated' and concluded, 'I don't think humankind is managing itself very well'. Jenny was in her early fifties; she has two adult children and works as a social worker. Like Andrew and others, she was sympathetic to infertile people's desires to have children and she drew on her own experience of meeting Paul, who also has children from a previous marriage, later in life to express her empathy with older people seeking technological assistance to achieve a pregnancy. However, like Andrew, she compared the 'resources' that would be needed to help an older couple achieve a pregnancy to the needs of the 'unwanted children of the world' and concluded that 'it doesn't stack up'. In this, Jenny reflected a common belief amongst people in Spey Bay that it is ethically preferable for people to look after children in need that have already been born than to expend finite resources on creating new ones.

Although some ART are available on the NHS⁹, provision is still quite limited in relation to the typical 'success rates' of these technologies and so even in the UK, medical treatments for infertility are difficult to access, especially for people on lower incomes who cannot afford private treatment here or abroad. In their comments about caring for children who need homes, both Jenny and Andrew explicitly referred to resources. Their concerns about infertility treatment using up stretched resources point to their sense that the world's resources – whether parents, medicine, money or

decent homes – are unevenly distributed and their fear that ART could exacerbate this. This concern about the uneven distribution of resources demonstrates their keen sense of the dependence of future generations on current and past ones. These concerns are also linked with a tension between individuals' freedom of choice on the one hand and collective goods on the other. The everyday ethics of people in Spey Bay and their reproductive ethics are both characterised by concerns about how to control excess and waste in order to achieve stability. Andrew and Jenny fear that greater access to ART will redirect resources away from the 'unwanted children of the world'. This concern is not only about entrenched economic inequality, but also about how we best manage existing resources and needs. Their ideal future is one that is sufficiently resourced to receive future generations.

An Endangered Future

Now that climate change has been accepted as scientific orthodoxy, scientists have become more vocal in pointing out the necessity to take reproduction into account in studying the natural world and predicting its future.¹⁰ In 2009, *Philosophical Transactions of the Royal Society* published a themed issue which focused on 'Impacts of environmental change on reproduction and development in wildlife', edited by Stuart R Milligan, William V Holt and Rhiannon Lloyd. In their introduction, they write that, while the global human population is growing rapidly, reproduction amongst non-human animals is not faring so well and rates of extinction in other species are accelerating (2009: 3313). They note that, 'Successful reproduction is fundamental to the survival and evolution of all species' (2009: 3313), but bemoan the fact that little interdisciplinary work has been done by scientists specializing in reproduction and scientists looking at the effects of environmental change on populations and ecosystems (2009: 3314-5). Their conclusion makes the importance of the environmentally sustainable distribution of resources and the interconnectedness of species and their environments clear:

In reality, the success of humans to populate the planet has been dependent on the combination of their ability to reproduce successfully and then to minimize loss of offspring through controlling and manipulating their own micro-environment. Unfortunately, this local control has largely operated without consideration of the knock-on effects of resource use on the macro-environment. It is now clear that anthropogenic environmental changes may

affect both the reproductive success and the survival of many wildlife species by multiple routes and in often unpredictable ways. Since man [*sic*] does not exist in isolation, these wider impacts of anthropogenic macro-environmental changes need to be understood by society at all levels. (2009: 3318)

In Spey Bay, a vital locus of concern about the environment is species endangerment. In December 2006, a dead sperm whale washed up on a nearby beach. The incident was covered by the national and local press, which reported that the whale, an adult male, had died of malnutrition. For people in Spey Bay, this tragic incident exemplified the consequences of the destruction of cetaceans' environments by human activity. They told me that the whale was probably unable to feed sufficiently because it could not find enough squid due to industrial fishing methods or because it had swallowed some of the indigestible plastics that pollute the seas. For them, this whale's fate epitomised the effects of accumulated human activity, as well as the inattention to the fact that we live in an interconnected and interdependent environment of those who pollute the environment, destroy wild habitats and decimate the food chain through industrialised fishing.

Sperm whales are a threatened species because of environmental changes and because they are still recovering from the effects of whaling, which was a booming industry in northeast Scotland in the eighteenth and nineteenth centuries. As well as being endangered species in themselves, sperm whales represent many of the problems that environmentalists perceive to be threatening the environment more generally, from the effects of industry and acquisitive capitalism, to a tendency to think of plants and animals as resources to be exploited, to a lack of respect for other species' ways of life, to chronic short-termism.¹¹ They prismatically reflect the past, present and future, exemplifying the effects of catastrophically poor management of 'natural resources' and the more or less effective responses to the losses that mismanagement has caused.¹²

In his ethnography of environmentalism in Hong Kong, Timothy Choy says:

To speak of an endangered species is to speak of a form of life that threatens to become extinct in the near future; it is to raise the stakes in a controversy so that certain actions carry the consequences of destroying the possibility of life's continued existence. Species can be endangered, as can ecosystems. And, as environmentalists grapple increasingly with the tight bonds that can

be formed between people and places, between situated practices and specific landscapes, and between what are commonly glossed as culture and nature, discourses of endangerment have come to structure not only narrowly construed environmental politics, but also politics of cultural survival (2011: 26-27).

Choy describes endangerment as provoking 'anticipatory nostalgia' and this is apt here too. In contrast to many of the British communities that have been described by anthropologists, people in Spey Bay do not dwell on the past and tend to locate (potential) crisis in the future. They feel that life in Spey Bay offers a sense of warmth and belonging and see this as a sign of hope. They wish to conserve this not to preserve a past idyll, so much as to ensure the survival of future generations of all species. While present life in Spey Bay is not characterised by nostalgia for a lost, better past, people there do fear being nostalgic for what they have in the present when they reach the future – and the ability to reproduce 'naturally' is crucial to this.

In his history of environmentalism, Joachim Radkau (2014) has noted that environmentalism is characterised, within the contemporary 'risk society', by a focus on hypothetical risks. The affects of endangerment include fear, anxiety and a sense of heightened risk. While these affects may all originate in the past or present, they are anticipatory of worsened future conditions. The temporality of environmentalism is future-oriented, but it is a negative future of crisis, death and destruction. This contrasts with the normative generative temporality of reproduction, which posits having children as a necessary and positive event in a normal adult life-course (which of course adds to the sense of loss of many who experience infertility). However, the negative affect of endangerment can also be generative, in driving the efforts of those interested in caring for the environment.

In Spey Bay, people's primary focus was on cetacean endangerment, but when we talked more about how people have children, it became clear that their fears extended to humans, pointing to an endangered future in which the expected link between generativity and futurity could become denatured. People in Spey Bay connect reproduction and children with the future. They believe that future conditions are produced through present and past actions and this is crucial in their understanding of their own ethical responsibilities. In the discussions I had with them, these concerns were manifested most forcefully in two examples, both concerning future infertility. One was anxiety about pollutants in water affecting people's ability to

reproduce and the other was a sense that technological assistance in reproduction might eventually 'breed in' infertility. These examples demonstrate the links they perceived between reproduction and the state of the environment and the assumption that future generations will be affected by the actions of current ones. This suggests a sense that infertility may be a sign of environmental problems as well as a harbinger of endangerment.

When we discussed whether rates of infertility might be linked with contemporary lifestyles, Jenny was prompted to think of the interaction between human activity, biology and the environment, suggesting that oestrogenic chemicals in the water supply were contributing to a 'feminisation of men'. She told me that she thought that these pollutants were causing 'physiological stresses' that were 'contributing to difficulty in conceiving' for many people. Various scholars have written about the environmental movement's framing of pollutants, like the endocrine disrupting chemicals (EDCs) that Jenny refers to here, and specifically the ways in which gender is made through activism on this issue (see Scott 2009; di Chiro 2010; Lamoreaux 2013). EDCs are striking because they show no deference for human boundaries – these 'oestrogen-based residues', as Jenny described them, are promiscuous chemicals, associated with female sexuality, hormones and reproductive physiology and they threaten to 'feminise' men. As they circulate through water supplies, food and bodies, they seem to poke fun at binary categories of male and female, human and animal, land and water, threatening to leave confusion, infertility and endangerment in their wake.

Internationally, campaigns against EDCs have been especially effective in capturing public attention because they touch on existing assumptions about the universality of maternal responsibility and our future existence relying on 'normal' sexual reproduction, pervasive fears about runaway scientific progress and the sense that future generations will inherit the consequences of previous ones' choices and actions. EDCs also remind us of the importance of ideas of waste, and how to deal with it, to people who are concerned about the future of the environment. The idea of EDCs polluting water supplies is not only one about boundary crossing, but also about what we do with excess. In talking about children who were orphaned, homeless or who had been taken into care, Jenny and Andrew both suggested an imbalance between the numbers of children in need and the world's 'resources'. This sense that excesses need to be managed and that balance needs to be maintained

became even clearer when people talked about the potential long-term consequences of relying on technology to conceive children.

Andrew articulated his concerns in the following terms: 'I think, in our society, or the human race as a whole, we've evolved beyond evolution,' since, 'people who naturally can't conceive can now conceive with science'. Sophie worked with Andrew in the wildlife centre. She was in her late twenties, single and had no children. In discussing current fertility rates in Scotland, she referred to what she had learnt about animal husbandry as an undergraduate student and recalled that '...actually humans are pretty crap at being fertile if you compare them to the farm animals [which] we breed ... over the successive generations to be really fertile'. She went on to describe her concern that assisting people to have children through technology could mean that 'some things don't naturally select out', which led her to conclude that humans would find it increasingly difficult to reproduce successfully. In the next breath, she pulled her focus out to the planetary scale, saying, 'Then again, I suppose ... from the ecologist's point of view, I might say, well, there's quite a lot of humans and maybe this is just the way it goes, maybe this is the way the cycle goes'.

In general, people in Spey Bay were nuanced and sensitive in their judgements of ART and were very sympathetic to the 'natural' desire of infertile people to have children, but there were examples of assisted conception that we talked about which provoked strong negative reactions, specifically those which seemed to be the result of (potential) parents putting their own needs above those of their children. For many, the idea of post-menopausal women using ART seemed to represent an excess of individualism manifested in personal choice that could both denature reproduction and dehumanise kinship. Paul's own father was in his mid-forties when he was born and he thought that women using ART when they have passed menopause was 'a bit selfish'. He said, 'I don't think it's fair on children, really. And it's so unnatural. I don't know if we should as a human race be necessarily moving – I feel this about a lot of things – I don't think we should necessarily be moving away from nature all the time into some world of science. It just seems the wrong way'.

People in Spey Bay drew on images of movement and momentum when they described their concerns about the future, linking space and time as they outlined their fears about human activity becoming divorced from nature through scientific over-reaching. It is well established that science and technology are, in Euro-American thinking, closely associated with progress and forward movement and

much of the positive rhetoric, and marketing, surrounding ART promotes its promissory value. This resonates with the biogenetic model of reproduction in which children are their parents' future, but also with an ecological ethic that holds current generations responsible for creating stable environments for future ones. Like space, how we envisage time is closely linked with how we see our environments and with our visions of the future. But, in the concerns about 'moving away from nature' that people expressed to me, they were not simply reproducing a linear progressive view of history. Andrew even made the striking claim that ART had caused humans to 'evolve beyond evolution'. The future, in their view, is the accumulation of choices and activities, though these are never fully predictable or 'rational', but are contingent on context and relations. As the species with the greatest capacity to spoil our environment, they believe that humans have a particular duty to try and prevent catastrophic destruction by responsible action and careful planning.

In her comments comparing the fertility of farm animals with humans, Sophie switched between different models of time. The timeline of selective breeding, which she overlapped with evolutionary time, is a linear one in which certain traits can be bred in (or out). In this model, future generations are a product of the decisions and actions of previous ones, which can be progressive or degenerative. In thinking about the distant future, Sophie referred to the cyclical 'ecologist's point of view'. In doing so, she was not only making her concerns about technological hubris leading to human endangerment clear, but also her sense that humans are only one part of the environment – and, from an ecological point of view, not necessarily the most important one, either. There is a strain of environmental discourse that emphasises the importance of stabilising the human population in creating an environmentally sustainable future. Here, Sophie goes beyond this dystopian scenario of too many humans consuming the world's resources to another vision of the future in which humans have themselves become endangered, and there is an implication in what she says that, if humans do become endangered or extinct, other species might live on.

Conclusion

In contrast to the temporalities described by Jane Guyer (2007) in her thought-provoking discussion of the near future, people in Spey Bay think about and plan for a range of futures, including the near future. Their everyday efforts to care for the

environment and their concerns about creating a stable environment for children both suggest that the near future is salient. People in Spey Bay draw on multiple chronotopes (see Bear 2014) when thinking about future generations, but they do perceive connections – albeit complex ones – between actions in the present and the future.

People in Spey Bay were not militant in their adherence to environmentalism, much as they worried about the future of the planet and its myriad inhabitants. Although they are aware of ‘tipping point’ arguments about species extinction, sea level rises and the extraction of fossil fuels, they see themselves as being at a place in history in which there is still time to prevent catastrophe. Their everyday practice and ethics reflect a striving for stability, and this is true of their attitudes to technology as much as anything. They did not dwell on dystopian visions of the future and their concerns about the future of human reproduction were suggestive rather than expectant. They did not assume that ART would lead to human endangerment, but instead hoped that those with the power to do so considered such hypothetical risks when developing, promoting and providing treatments to infertile people. As Sophie pointed out in her example of selective breeding in agriculture, some technical intervention in reproduction can be desirable, and technology is not necessarily degenerative or endangering. The difficulty is in achieving a balance between individual desires and collective wellbeing, or present needs and future consequences. Envisioning a future in which people have become over-reliant on ART to reproduce, people in Spey Bay worried that there would be a cumulative effect of choices which favour individual desires over collective goods. For them, the future is the accumulation of those choices, which can build up like waste or pollution and create loss and death.

While we are used to thinking of Euro-American kinship and reproduction in terms of biogenetic substances being inherited through the generations, in an ecological ethic of reproduction, the emphasis is on the environments parents create and leave behind for future generations. In this ethic, having children is about passing on stable environments in which they can thrive. This is an important departure from established understandings of kinship in both the anthropology of Britain (and the Western world more generally) and in the literature on ART. Not only does it suggest that people are thinking about more than biogenetic inheritances or kin relations when it comes to reproduction, but that fertility emerges from good human-environment relations. This complicates a cultural model in which reproduction consists of the mixing of particular bodily substances and with it the implication that

humans simply reproduce through their own gametes. It provokes a change of scale in perception to take account of the fact that, in order to be fertile, humans must have access to good enough environments in which to conceive, gestate, give birth to and nurture children. The greater awareness of infertility that has come alongside the development of ART and the increasing age of women having their first child have both contributed to a sense that fertility cannot be taken for granted and that pregnancy is achieved. In the ecological ethic of reproduction, which is informed by concerns about species endangerment and the effects of pollution and climate change as well as greater popular awareness of human infertility, fertility is not an essential property of persons, but is made through creating stable environments.

Importantly, these concerns about building stable environments can be read back into a biogenetic model of kinship, since anxieties about the circulation of EDCs and the over-use of reproductive technologies posit that human activities are not only potentially destroying the environment but also causing infertility by changing our very substance. An ecological ethic of reproduction proposes that we should take account of environmental factors when considering the health of all species and it suggests that infertility may be a clue to environmental harms. Rather than jumping straight to a biomedical 'fix' for infertility, an ecological ethic prompts people in Spey Bay to consider why people might be infertile in the first place and whether it might have something to do with the state of the planet itself. Scientists are also increasingly interested in these connections, for example in toxicological research on the effects of environmental pollutants on sperm (Lamoreaux 2013), and contemporary biological science is paying increased attention to cellular environments, for example in research into epigenetics, regenerative medicine and the culture media in which IVF embryos are matured before being transferred to the uterus. Recent sociological and anthropological research has also shown the current importance placed on parenting, or what we might call the familial environment, in British culture and public policy (Lee et al 2014), suggesting that the prominence of conception in reproduction has somewhat diminished.

The contemporary environmental movement has been criticised for its focus on individual efforts, which can have the effect of detracting attention from the ways in which corporations and governments contribute to environmental change. But, individual concerns and actions are still an important part of the struggle, not least in building awareness of the causes and effects of a changing climate. The case of the people who work and volunteer in the wildlife centre in Spey Bay that I have

discussed here shows just how deep anxieties about the environment go. They show that reproduction is not only about kinship or biology; it is also about how people build and grow environments. Their anxiety that the world will not be fit to nurture future generations is highly critical of the world in which they live: it is an indictment of a hegemonic worldview that prioritises economic growth over ecological fecundity and it reflects their sense of the profound interdependence of humans and their environments.

In an ecological ethic of reproduction, the goal is to live and reproduce in an environment that is both liveable and capable of regenerating itself. The implication of this, that environments nurture people, has significant implications for anthropological understandings of reproduction and kinship in the twenty-first century. An ecological ethic of reproduction moves the emphasis away from the biogenetic model with which we are familiar – and which seems to drive demand for ART – towards the making of healthy and stable environments. This suggests a subtle shift in the temporality of reproduction, in which reproduction is as much about the ongoing nurturance of children as it is the conditions of their conception. This is also significant in what it suggests for Euro-American conceptions of the relationship between ‘nature’ and ‘nurture’. An ecological ethic of reproduction assumes that the proper conditions for fertility and reproduction result from nurturance of the environment, so a good environment enables reproduction, which is an ongoing process of nurturance from both the parents and the world in which future generations will grow up.

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¹ In my monograph based on this research (Dow, in press), I discuss the ethical values and labour of people in Spey Bay in some detail. While ethics is not the explicit theoretical focus of this article, ethical questions pervade life in Spey Bay (Laidlaw 2013: 1) and they are perhaps most apparent in people's deliberations about reproduction and the making of a good life (see also Edwards 2000; Mattingly 2014).

² This is, as Lee Edelman (2004) points out, also a heteronormative view of the world, which frames alternative views which are not focused on children as 'negative' and which Others people who do not identify as heterosexual and those who are childfree.

³ The recent interest in the Anthropocene in anthropology and elsewhere suggests Strathern was characteristically prescient in pointing to the epochal implications of climate change.

⁴ This specificity in their everyday political beliefs and ethical values is why I am calling their way of thinking about kinship an ecological ethic rather than an environmental one.

⁵ Commercial fishing no longer takes place in Spey Bay, but neighbouring villages in Moray and Aberdeenshire are still active in the fishing industry, as has been documented by Jane Nadel-Klein (2003). In Moray, the fishing industry is in decline while tourism (including for leisure fishing) is increasing and some former fishers have repurposed their boats for wildlife watching tours. In the county, the biggest employers are the public sector, which includes the two military bases at Lossiemouth and Kinloss, and the manufacturing sector, which includes the extremely lucrative Speyside whisky industry (This is Moray website).

⁶ Environmentalism has commonly been characterised as apocalyptic by public commentators and climate sceptics. Joseph Webster (2013), who carried out fieldwork in a village that is geographically very close to Spey Bay, has suggested that environmentalism is millenarian, based on his evangelical informants' reading of the film *An Inconvenient Truth* (dir. Guggenheim 2006). While environmentalists, like any other activists, inevitably draw on the religious, political, economic, philosophical and ethical ideas circulating in their particular cultural milieux, in Spey Bay, Christianity played a very small part in people's lives, as most are agnostic or atheist. If anything, their focus on conserving the environment for future generations seems rather worldly, as it does not rest on the assumption of a better afterlife.

⁷ Both reproduction and the environment have been of recurrent interest to science fiction and dystopian writers, from Aldous Huxley to Ursula Le Guin to Margaret Atwood. See also Donna Haraway's reflections on science fiction (and other SFs), including most recently, her talk, 'Anthropocene, Capitalocene, Chthulucene – Staying with the Trouble'.

⁸ This was also the overarching view of Baroness Mary Warnock, who led the Committee of Enquiry into Human Fertilisation and Embryology that was highly influential in the public debate and eventual legal regulation of ART in the UK (Warnock 1985, 2002).

⁹ In 2013, the Scottish Government announced additional funding to end the 'postcode lottery' of access to NHS fertility treatment in Scotland, with the aim of reducing waiting times to twelve months by 2015. Under the new regime, eligible patients can have two full cycles of IVF treatment and unlimited frozen embryo transfers up to the recipient's fortieth birthday (Scottish Government 2013).

¹⁰ See Carrie Friese's recent book, *Cloning Wild Life* (2013) for more on this theme.

¹¹ For readers who are not familiar with northeast Scotland, it is probably also worth mentioning that one of the largest industries in the region (centred around Aberdeen) in recent decades has been oil and gas production.

¹² See van Dooren 2014 on parallel issues in relation to birds

Response to Reviewers

In this revised manuscript I have paid particular attention to the advice of both R1 and the journal's editor to strengthen the conclusion and to develop the article's theoretical contribution more explicitly. I have also followed the editor's advice on the opening vignette of the stranded sperm whale and actually gone further, by removing it from the opening of the article and reducing it to two fairly brief paragraphs in the section on endangerment on p.14. I think, as suggested, that this improves the article by making its aims and arguments clearer from the start. I have followed R1's important point about clarifying 'environment' by adding a fairly long paragraph explicating the different meanings of 'environment' at play in the ethnographic description, which is on p.5, as well as making some minor revisions to other parts of the article to further clarify this. I have also attended to the minor points noted by both reviewers as well as making a few other minor improvements.

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21/3/16