Have a Heart: Xenotransplantation, Nonhuman Death and Human Distress

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An increasing shortage of transplant donor organs currently results in an escalating number of preventable human deaths. Xenotransplantation, the use of animal organs for transplantation into humans, is now heralded as medicine's most viable answer to the urgent and insurmountable human organ scarcity. Although claimed to be a biomedical prerogative, xenotransplantation is a cultural phenomenon – a procedure engaging both the physical and symbolic manipulation of human and nonhuman bodies, thereby transforming corporeality, identity, and culture. Biomedical and scientific discourses about xenografts have obscured issues related to nonhuman animals and also could be distressful to human organ recipients, revealing that the xenograft may not be widely embraced.

Organ transplantation is one of medicine's most potent symbols. In the late 20th century, organ replacement surgery has been presented, both in the media and medical texts, as a miracle of modern medicine (Birke, 1996). The replacement of diseased vital organs with healthy cadaveric organs is now routine – a therapy that not only extends life, “but also improve(s) its quality ... [and] is not particularly expensive” (Nuffield Council on Bioethics (NCB), 1996, p. 2). For biomedicine, the continuing success of organ replacement technology is now hampered only by deficits in "natural" resources: organs available for transplantation. As each year passes, the shortfall in organ supply increases, resulting in unnecessary patient morbidity and mortality (Caplan, 1992; Calne, 1993; NCB, 1996). Remaining tenaciously unresponsive to alternative procurement policies, health education strategies [Bulletin of Medical Ethics (BME), 1991; Caplan, 1992], or changes in the diagnosis of death (Ohnuki-Tierney, 1994; Singer, 1994), organ scarcity now constitutes one of medicine's fastest growing problems (Concar, 1994). The answer to the human organ shortage is now seen to lie in the resurrection of the xenograft, or trans-species transplantation. The use of animal products and parts is already routine in human medicine. As yet unfamiliar, and more ambitious, is the proposed transplantation of whole organs, such as the heart, from healthy transgenic animals into humans with end-stage organ failure.
The first xenografts involved transplanting monkey, goat, sheep, dog, and pig organs into humans and took place in Europe at the turn of the century. The physicians of the time were unaware that "discordant xenotransplantation," between such distantly related species, would cause the human immune system to mount a much fiercer rejection than "concordant xenotransplantation" between more closely related species. "Hyperacute rejection" is the fierce immune response whereby xenoreactive antibodies disrupt the endothelial cells of the foreign organ, causing the blood to clot in the vessels. Concurrently, "complement proteins" attack the transplanted organ by punching holes in cell membranes. Subject to this combined onslaught, the graft becomes black, swollen, clotted, and is rapidly destroyed.

All early attempts at xenotransplantation failed and the procedure was abandoned until the early 1960's, when the source animal chosen became the nonhuman primate. Nonhuman primates were chosen based on the premise that the closer the phylogenetic similarity between the "donor" and recipient, the less severe the rejection process might be. Clinical trials confirmed that kidney, heart, and lung xenografts were capable of functioning within the human body.

The rejection process proved to be qualitatively similar, but quantitatively more severe, as the genetic disparity between the donor and recipient widened. So, for baboon-to-human xenografts (longest survival 98 days) the clinical rejection, although much improved from non-primate grafts, was severe and repetitive. Chimpanzee-to-human xenografts (longest survival nine months), however, showed survival rates comparable to allografts of the same period. From an immunological perspective, primate grafts were proving to be a viable option, whereas bioethical objections, raised both on behalf of the early experimental recipients and the animals, made it "abundantly clear that the killing of monkeys to save human lives was too emotive ever to be a practical solution" (Stark, 1996, p. 169).

After a century of sporadic xenotransplantation, totalling around 35 clinical trials [British Union for the Abolition of Vivisection (BUAV), 1995a], biomedicine has now turned to the cheap and plentiful pig as a source of organs and to "transgenesis" as a way of overcoming the problem of hyperacute rejection. Transgenesis involves the transfer of human genetic material into the pig. The cells of "transgenic pigs" then carry a protective human "armour" of "complement regulating proteins" - the proteins that naturally coat the human cells and inhibit the activation of the toxic complement protein that causes rejection. The pharmaceutical industry sees transgenesis as a breakthrough for xenografting and has invested heavily in this area (both in the United States and England). Using breeding herds of genetically modified pigs, trials involving transgenic pig-to-
Xenotransplantation is an auspicious contemporary theme, resurrected against the historical and efficacious backdrop of allotransplantation. Xenografting encapsulates the powerful transformation of science and new genetic engineering technology into a surgery focused on the postponement of human death. These cogent images combine to herald the xenograft as a timely, germane and optimistic example of a rapidly evolving “high technology medicine” (Robinson, 1994), a medicine within which animal organs become a realistic means of restoring human health, and animal “sacrifice,” a means of scientific progress.

There are, however, more voices to be heard within this unfolding medical drama. Despite its biomedical efficacy, transplantation cannot be assumed to be personally and culturally unproblematic. Although all illness is associated with questions of human ontology, organ transplantation is a process in which disputes over the nature of the body, life, death, and personhood become particularly acute (Joralemon, 1995; Sharp, 1995). Transplantation transgresses the received dichotomies of life and death, self and non-self, and human and animal (Ohnuki-Tierney, 1994; Lock, 1995), manipulating and blurring the boundaries of the human body and thereby, human identity and culture. Despite the biomedical prerogative, the issues that xenotransplantation raises cannot, therefore, be resolved “simply on medical grounds” (Wilkinson, 1996, p. 28), for they touch upon too many aspects of human and nonhuman life.

The Xenotransplantation Imperative

In Japan, public debate concerning the diagnoses of death and their implications for organ procurement and transplantation has been informed, participatory, and influential. Conversely, in North America and parts of Europe, there has been almost no public discussion. In the West, the development of the artificial heart (Fox & Swazey, 1992), kidney transplantation (Plough, 1986) and advancing technological medicine, have come about largely without ethical debate and legislation (Kimbrell, 1993). Moreover, these medical advances may owe more to the technological imperative, personal and institutional power and profit, than to the postulated success of the procedures for reducing morbidity in patients or populations (Preston, 1994; Stark, 1997). Xenotransplantation’s technological imperative and its massive corporate financial backing (BUAV, 1995b; P. Martin, 1995) raise concerns that medical experimentation will go ahead before full debate has taken place (Fullbrooke & Wilkinson, 1996). This threatens to leave potential
human organ recipients and nonhuman animals mute in the face of the power of "science" and the success of biomedical procedures. For, "the powerful objective of saving [human] life ... has traditionally tended to overwhelm critical questions about the means ... and the consequences of the process" (Robinson, 1994, p. 6).

This article addresses the "muted" (Ardener, 1975a; 1975b) discourses – the voices that compete for credibility alongside the "articulate" metalanguages of science and medicine. By venerating the experiences of transplant patients, the fears of potential xenograft recipients, and the claims made on behalf of "donor" animals, it is clear that the xenograft may not be widely embraced (Mohacsi, Blumer, Quine & Thompson, 1995) – inside or outside of biomedicine.

Science or Fiction: Which Voices are Credible?

In the unfolding representation of the xenograft, one British story has been prominent. "The organ factory of the future" (Concar, 1994), featuring Astrid, the "pig with the human heart," was first published in the New Scientist. Subsequently it was used as part of an information package, created in the spring of 1995, by the British Nuffield Council on Bioethics Working Party on the Ethics of Xenografts. This article was the only overview of xenografts dispatched to prospective contributors, and as such has served as a crucial narrative that has helped British understanding of xenotransplantation. The following paragraph forms the introduction to this article:

At a secret location in Cambridgeshire, researchers inject human DNA into a pig embryo. Six months later Astrid, the world’s first transgenic pig, is born – of a virgin, in a sterile stable, on Christmas eve. The hope is that the implanted gene will make pig organs’ compatible with the human immune system, thus helping to solve one of medicine’s fastest growing problems: the shortage of organs for transplant surgery. Astrid produces offspring, the research gathers pace. But there are problems, too: antivivisectionists launch firebomb attacks and medical ethicists get jumpy. (Concar, 1994, p. 1)

With its ludic manipulation of science and symbol, the story of the virgin porcine birth stands in contrast to the more familiar rhetoric that typifies scientific text. Ironically, it is precisely the juxtaposed opposition of science and fiction, and the explicit playfulness of the narrative, which so powerfully underlie its scientific authenticity and claim to truth. Indeed the author explicitly seeks to "sort out the facts from the fantasy" (Concar, 1994, p. 1), and by doing so, destabilizes
competing discourses. For while the narrative is scientifically authentic; it is simultaneously a fictitious artifice. But ultimately, we are left in no doubt as to which is which.

While the Astrid story venerates the voices of science and medicine and problematizes the voices of the ethicists and antivivisectionists, it fails to give "voice" or "agency" (E. Martin, 1995) to the virgin mother and her offspring, or to the recipients of their transgenic hearts. It is these narratives that are absent or muted within current debate.

**Inherent Ambiguities of Transplantation Surgery**

Modern medicine, like all healing systems, is a culturally determined and determining, set of technologies, practices (Comaroff, 1981), and associated knowledges (Strathern, 1994). As part of that culture, transplantation is embedded in and predicated upon a set of historically and culturally specific concepts of the body, humanity, animality, personhood, and death. The Astrid story represents these biomedical and cultural assumptions that are not necessarily well-received by transplant recipients or broader culture (Joralemon, 1995).

Transplantation is a process besieged by ambiguities. As a vision, it is contingent upon a set of fundamental oppositions: of life and death, self and non-self, and mind and body. This reductive and mechanistic view of the body, as a collection of fragmented and replaceable parts, challenges the lived experience of mind/body and body/self integrity (Joralemon, 1995; Sharp, 1995). Cardiac transplantation has been further predicated on a diagnosis of brain-death, which enables the procurement of cadaveric organs from "beating heart donors." The determination of death as a cerebral moment, rather than a corporeal and social process, together with the reconceptualizing of death in response to the increasing scarcity of transplantable organs (Ohnuki-Tierney, 1994; Singer, 1994), undoubtedly contributes to biomedicine’s "curious anomaly" of organ donation (BME, 1991). Despite opinion polls which consistently show that over 70% of British (BUAV, 1995b; NCB, 1996) and American (Creecy & Wright, 1990) citizens support the "concept" of organ donation and transplantation; less than 25% of either population carries donor cards.

Xenotransplantation becomes a seductive vision, for initially it appears to circumvent the "curious anomaly" of human organ donation and the inconsistencies in procurement and allocation of organs, not to mention the debates about definitions of death (Lock, 1994). It sidesteps them. Debates will continue over the nature and ownership of bodies, definitions and respectful treatment of the dead.
and the manner in which organs are harvested and reallocated. These pervasive concerns are conditioned by the symbolic oppositions of life and death – categories acknowledged and sacred in almost all cultures (Ohnuki-Tierney, 1994). Xenotransplantation merely augments and complicates these dualisms by adding the category of animality – it blurs the axiomatic boundary “dividing humans from nonhuman animals [which] is ... not just important but sacred, and its transgression is taboo” (Ohnuki-Tierney, 1994, p. 240). It is here, on the boundaries of the body and its most intimate organs, that xenografting inscribes a set of unique tensions, raising concerns that will prove as disturbing as those which preceded them in the conventional transplantation arena.

In the “traditional” cosmologies of the West, where the human animal dichotomy is our ontology, xenografting threatens an axiomatic and immutable boundary. For potential transplant recipients, whose self must embody something “other” than human, xenotransplantation is a troublesome, chimerical vision. For exponents of “new environmental cosmologies” (Sutherland & Nash, 1994) and the animal rights movements, the issue of human-animal continuity or equivalence may render the distress, when faced with replacement animal organs, even more acute.

**Human Animal Discontinuity**

I would never have a pig’s kidney inside me. I want to go to my grave as a human being, not half human, half pig. (Sir McNair-Wilson, in Boyle, 1989, p. 20)

As clinical xenotransplantation is set to resume, the failures of the past are now attributed to a biotechnology that was insufficiently prepared and lacking in the current benefits of improved surgical techniques and modern immunosuppressive therapy. Hopes are now pinned to the newly created transgenic pig – a genetically designed animal that will, potentially, help us to overcome hyperacute rejection.

Zoonoses, retroviruses, and the quarantine of early patients, now replace immune rejection as biomedicine’s primary obstacles to clinical xenografting [Advisory Group on the Ethics of Xenotransplantation (AGEX), 1996, 1997; Allen, 1996; NCB, 1996]. The potential dangers of transplanting organs, and possibly epidemics, are underpinned by virological fears that “most new emerging infectious human diseases generally have their origins in other species” (Allan, 1996, p. 18). These contemporary concerns are fuelled by older mythological themes and the fears of trans-species contamination (i.e., animal phobias). These
terrors result from historical and cultural association of particular “disgust-evoking” animals with their dirt, disease, infection and contagion (Webb & Davey, 1993; Davey, 1994; Ware, Jain, Burgess & Davey, 1994), or as harbingers of plague and icons of ill-luck and misfortune (Sax, 1994). The psychological fears assume an added potency when cultural, species, or bodily boundaries are also transgressed (White, 1991).

Xenotransplantation breaches the boundaries of the body with animal organs, kindling a human imagination entranced with the monstrousness of human-animal anomalies. No longer merely the products of metaphor (Ritvo, 1987, 1991), myth, fantasy, and horror (Davidson, 1991; Tudor, 1995), the blurring of traditionally inviolable boundaries is now institutionalized. Medicine now routinely creates collages of the dead and the living and of humans and animals – hybrids that will influence images of the body and the self, society and social relationships (Helman, 1988). Physicians, like virologists, need to be cognizant of the full potency of these images, which may only emerge, like zoonoses, during the clinical process.

Embodiment and Transplantation

The problems of xenotransplantation emerge from the body – the body not only as a site of defiled corporeality or of disturbed individual psychopathology, but as an embodied existence of lived experiences and social relationships. Our bodies are central to our identity, with perceptions of self created through the lived body (Csordas, 1990). This experience of self/body integrity is however, discordant with the scientific rhetoric and medical representation and rituals of transplantation (Joralemon, 1995; Sharp, 1995). Transplantation is a series of technologies dependent upon a vision of a corporeal and fragmented body that can be divorced from the self for the purposes of medical and surgical intervention. Consequentially, the paradigm of embodiment, and of embodiment as central to perceptions of identity and culture, has been confused (Woods, 1996) and undervalued (Fullbrook & Wilkinson, 1996) in British bioethical debate on xenotransplantation.

Transplantation has been shown as a “personally transformative experience in which the transfer of organs … often radically alters an organ recipient’s definition of self” (Sharp, 1995, p. 360). In the post-transplant phase of their lives, patients begin to restructure their new sense of self – a self that incorporates the non-self organ. In this post-operative struggle, the reconstructed body, and, more specifically, the transplanted organ, become the most important referent through which recipients reconfigure a new identity (Sharp, 1995). During the clinical process, both organ recipients and clinicians struggle with medically and personally
discordant images of the body and its parts. Clinically, bodily organs are mere mechanical pumps or filters, containing no "essence" of the person, or animal, from which they were "harvested." At the same time, organs are personalized as multivocal symbols and "gifts of life." As integral parts of the body, and concomitantly the self, they may be felt to incorporate the traits of their donor (Sylvia, 1997). This struggle, between objectifying and personalizing organs, is exemplified in Jo Hatton's autobiography. After ten years, Jo is one of the longest-surviving heart and lung recipients in Britain.

Our talk with Virginia (the social worker) had put many things into perspective... The heart wasn't the seat of fine emotion and the center of love, it was a muscle. We talk about the heart as if it had a personality of its own. If you had the heart of someone else, where you the same person? Or did you gain some of their soul? Heart and soul were synonymous in the eyes of many, it was very difficult to be objective (Hatton, 1996, p. 63).

"Body parts are always more than mere things" (Lock, 1995, p. 392) and the struggles to reify and objectify an organ become exacerbated when the transplanted organ is a "dominant symbol," such as a heart – particularly the heart of someone of a different gender or ethnicity (Fullbrook & Wilkinson, 1996; Joralemon, 1995; Sharp 1995) – let alone species. The resultant distress and isolation culminates in a high incidence of postoperative psychiatric complications (Craven & Rodin, 1992; Fullbrooke & Wilkinson, 1996), with recipients emotionally rejecting the organ or changing their lives in accordance with the real or imagined characteristics of their donor (Basch, 1973; Houser, Konstam, & Konstam, 1992; Smith, 1990). Although we currently have no way of knowing the effects of xenotransplantation, the "considerable evidence of trauma" among recipients of human organs, suggests that "this trauma could be repeated, perhaps more severely, by those who receive animal parts" (Wilkinson, 1996, p. 28). Xenotransplantation and transgenesis, cause "humans to fear that their common human nature, and capacities considered unique to it, might be eliminated" (Papagaroufali, 1996, p. 241).

In attempting to retain human uniqueness and wholeness, most Greeks with whom Papagaroufali (1996) discussed xenotransplantation expressed a preference for artificial over animate organs. Next, was a category of people who expressed an aversion to animal organs, particularly genetically altered ones:

For these people, animals are "very different from humans": they are "inferior creatures to humans, in all aspects" and "rather disgusting." For some, accepting animal organs in order to survive was also considered
"insulting to human nature." Genetically engineered animal donors were also rejected: "The last thing I want in this short life of mine is to have a monster inside me and perhaps become one," said one man, laughing loudly. "These are not natural things," he added, displaying anger, disgust and horror (Papagaroufali, 1996, p. 249).

The fear of animal transplants transforming perceptions of human identity and uniqueness were clearly expressed by contributors to the Nuffield Council’s consultation exercise:

We have been made superior to animals and it would be degrading to be made part pig, part human. (Quoted in NCB, 1996, p. 105)

Xenotransplantation was understood by the Nuffield Council, as a procedure that will necessitate counselling as part of both the consent and adjustment process (AGEX, 1996, 1997; NCB, 1996). These recommendations were nevertheless made on the basis of the volume of information necessary for consent and the subsequent psychological adjustments to be made when faced with such a novel procedure. By reducing broader concerns to temporary, novel, individual, and psychological issues, the scope and intensity of these fears may have been misunderstood. Conversely, the creation of "humanized pigs" (BUAV, 1995b), taken as a more permanent matter of physiology, was perceived as a potentially more threatening hybrid. The British Government, took "the view that some degree of genetic modification (to pigs) is ethically acceptable providing ... that the pig neither suffers unduly nor ceases recognizably to be pig" (AGEX, 1997, p. 7).

Apprehension over changing the “nature” of pigs, was evident in a recent European study which sought the opinions of children and young adults towards transgenic animals and xenotechnology (Levitt, 1996). The children suggested that “if we changed them (pigs), they would be people” and “we would be creating a monster.” The risks involved to humanity were also clearly explicated through such statements as: “That’s disgusting, who would want a pig’s heart!” Although overall transgenic and xenograft technology was broadly supported (59%), the procedure clearly led to ambivalence and confusion over the blurring of boundaries. This tension was expressed by an eighteen-year-old Spanish girl, who felt that although xenotransplantation “should go on to save lives ... we have to think that they (transgenic pigs) will also be human beings and we shouldn’t harm them” (Levitt, 1996). The consequences of genetic manipulations have similarly elicited ethical questions from antivivisection groups:
Where human genetic material is being introduced into pigs, an ... ethical question, which must be addressed, is at what point is the human/pig species barrier crossed, and exactly how much human genetic material must these pigs contain before they are accorded those rights currently reserved for humans? (BUAV, 1994, p. 8)

**Human Animal Continuity**

Till the eighteenth century every civilized human society kept human slaves. Those of us that have tried to absorb the implication of Darwinian theory (that species are not natural kinds) suspect that our descendants will be just as critical of our casual contempt for those we know to be our cousins. (Steven Clark, in NCB, 1996, p. 41)

Xenotransplantation is a process whereby both humans and transgenic animals are reduced to their shared corporeality. The attribution of "esprit," solely to the human side of the divide, then creates an implicit "ontological disjunction" (Willis, 1994) – an ethical discontinuity that enables the creation, patenting, and commoditization of animals. Xenotransplantation naturalizes a boundary, vision, and knowledge of animals.

Interestingly, alternative cosmologies that stress human-animal continuity and equivalence are increasingly emergent and "gaining ground" (NCB, 1996, p. 8). Within Britain, the size and commitment of antivivisectionist groups has reached a level not witnessed since the Victorian era (Paul, 1995). But, whereas Victorian animal welfare sympathetically concerned itself with the protection of lesser defenseless animals, so long as human interests were not at stake (Singer, 1992), current movements regard human and animal interests more or less equitably. Increasingly, notions of bodily continuity are expanded to sentience, rationality, and personhood, to extending moral rights to some, if not all, animals. This new vision of human-nonhuman equivalence, together with an immutable commitment to anti-speciesism, requires that nonhumans are accorded equal or occasionally greater consideration of interests (Sutherland & Nash, 1994), in spite of their potential medical utility.

The paradox of animal rights is that by appropriating the interests or "voices" of animals, philosophers and antivivisectionists may face a problem – that their claims, on behalf of animals, merely reassert human superiority (Tester, 1991). Equally true, is the assertion that this paradox somewhat obscures the "spirit"
(Birke, 1994, p. 135) and commitment behind the animal rights movement. And while discourses on animal rights remain problematic, and representations of animals, as beneficiaries, insufficient, animal rights may be a good idea strategically (Noske, 1997, p. xiii).

**Primates as Source Animals**

In 1984, the heart of a baboon was “donated” to Baby Fae. Just a few weeks old, she was the first American cardiac xenograft patient. Although the graft was successful, Baby Fae only survived for 20 days following the implant. The other “victim” was Goobers, the baboon (Regan, 1985). For animal rights advocates, Goobers, as a sensate and experiencing subject of a valuable life, possessed intrinsic rights and should not, no matter who, or how many could benefit, have had that life taken from him:

> He did not exist as her resource. . . . Those people who seized his heart, even if they were motivated by their concern for Baby Fae, grievously violated Goobers’ right to be treated with respect. . . . That many of us failed to recognize the transplant for the injustice that it was, does not diminish the wrong. . . . Fundamental moral wrongs are not alterable by future results. Or by past intentions. . . . What we must not do, either now or in the future, is violate the rights of some in order to benefit others. Our gains must be well, not ill, gotten. One measure of our medical progress will be the number of Baby Faes we are able to keep alive. But our resolve not to kill future Goobers will be one measure of our moral growth. (Regan, 1985, p. 10)

Exactly a decade later, and the message of advocates of animal rights to the question of xenotransplantation, remains fundamentally unaltered:

The use of healthy animals as a source of “spare parts” for humans represents a fundamental denial of the inherent value of those animals’ lives. As such, the development of this technology, if successful, would represent a significant step backwards in the evolving recognition of the rights of animals. Animals are not mere machines made up of a collection of parts, or means to human ends, and should not be treated as such (BUAV, 1995a, p. 1).

For animal “rights” advocates, xenotransplantation is immutably wrong. For utilitarians, the balance of interests, in certain “individual circumstances,” may
render it defensible to kill a baboon to save a child (Singer, 1992). However, the routinized and institutionalized use of nonhumans, as a cheap reservoir of spare parts, and the failure to engage with equitable human alternatives is morally indefensible. For Singer, the primary objection to xenotransplantation is its failure to give equal consideration to the claims, interests, and preferences of all sentient beings, irrespective of species – it is blatant speciesism:

My objection is to the fact that we disregard the interests of nonhuman animals by ranking them as less worthy of our concern and respect than any member of our own species, no matter how limited in capacities and potential. (Singer, 1992, p. 730)

Despite individual nuances, Singer’s (1986, 1995) anti-speciesist Utilitarianism and Regan’s (1983) theory of Rights, are prescriptions for behavior based upon a radical redefinition of the moral status of nonhumans. These precepts issue “a serious challenge to the prevailing cosmology which gives humans dominion over ... animals” (Sutherland & Nash 1994, p. 174) and sanctions animal manipulation and utilization for human ends. Increasingly, it is the concept of animal rights that is prevailing, over both the “welfare” and utilitarian balancing approaches. Taking “rights” as a moral principle for our involvement with animals suggests that resistance to xenotransplantation will intensify (Francione, 1990), for it is a position that is clearly “not negotiable upon appeals to human utility” (BUAV, 1995a, p. 1):

It is clear that once we accept the concept of animal rights, it no longer is open to us to ask whether the “sacrifice” of a baboon to help Baby Fae is morally justifiable. The baboon is not something that exists for the benefit of Baby Fae any more than Baby Fae exists for the benefit of the baboon. The balancing question becomes irrelevant (Francione, 1990, p. 1045).

Not all animals however, are equal. Some antivivisectionists fail to include all animals in their claim for rights (Tester, 1991; Paul, 1995). Similarly, for vivisectionists, while some classes of laboratory animals are regarded as sensate and “pet-like”; others are sacrificial objects and commodities (Arluke, 1994; Paul, 1995). The British Government similarly maintains that while the use of pigs, as xenograft “source animals,” is ethically acceptable; the use of primates may not be (AGEX, 1996, 1997; NCB, 1996). The primates-versus-pigs debate resonates older human-animal distinctions by drawing upon categories of rationality, sentience, and sociality. So that, rarity and cost aside, Britain has found it difficult to justify the
use of primates, as a source species, due to their "close affinities" with humans. Paradoxically, companion animals, being even closer and more familiar, are actually more strongly favored as xenograft source animals by urban Greeks. By possession of a soul and being more familiar, pets organs are seemingly better placed to communicate more naturally with the human body (Papagaroufali, 1996).

Animal Agency

Animals appear in xenotransplantation discourse as biological commodities and in "anthropocentric" anthropological discourse, mainly as raw material for human thought and action (Noske, 1993, 1997). Anthropologically, both as biological, natural, passive objects of sustenance that are good to eat, and as culturally constituted polysemic totems, symbols and tropes that are good to think with (Shanklin, 1985). Xenografting authenticates only one discourse and bypasses anthropologically informed cultural representations of animals. Both discourses however, obscure the possibility of nonhuman animals as active subjects and agents who are not only socially constituted, but socially constitute (Noske, 1993, 1997). Through participant observation, empathetic understanding and imagining, Noske (1997) suggests that anthropology is well placed in the quest for animal resubjectification and respect of their realities and worldviews. At the same time, animal rights campaigners argue that certain animal realities – their interests and preferences to avoid pain, dismemberment, distress, and death – are already knowable.

Surely no one will seriously suggest that it was a matter of indifference to Goobers whether he kept his heart or had it transferred to another. Are we not yet ready to see that creatures such as baboons are not only alive, they have a life to live? ... Like us, Goobers was a somebody, a distinct individual. He was the experiencing subject of a life, a life whose quality and duration mattered to him, independently of his utility to us (Regan, 1985, pp. 9-10).

The Tension: Duality - Unity

While animals are living sensate agents, they are also subjects of the complex realm of human ideas and emotions. Rather than humans and animals driven into stark duality or synthetic unity, in all cosmologies there exists an "oppositional complementarity" (Willis, 1994) – a dialectic of humans and animals as separated
and yet, simultaneously, interconnected. The nature of animality, the classifications of the species and the understanding of individual animals, are enmeshed within a web of tensions strung between the themes of similarity and difference. The xenograft re-emerges at the site of these tensions as an icon of Cartesianism—a series of technologies dependent upon the fundamental dichotomies of Western biomedicine—dualisms that are often discordant with people’s embodied understanding of themselves or their lived experience of animals.

The xenograft is, nevertheless, a powerful vision for the prolongation of human life. A promise that has led many religious leaders to acquiesce that the sanctity of human life must override usual prohibitions on unclean animals and, in particular, on pigs (NCB, 1996). Although this amnesty has neither been widely or uncritically accepted (Barr & Birke, 1997), xenotransplantation advocates maintain that concerns of “unnaturalness” will dissipate as a function of necessity and familiarity (Caplan, 1992). Consenting to treatment that is discordant with beliefs or experience will not necessarily lead to familiarity or acceptance, for beliefs are not static cognitive structures that can be separated from praxis (Young, 1981). For the most part, surgical consent or dissent is unlikely to be fixed by static representations or notions of either affinity or disaffinity with animals. Patients’ decisions are more liable to arise out of a complex and dialectic web of lived experiences and beliefs that will continue to express the tensions between the boundaries of humanity and animality.

Summary

For transplantation surgery, the key to clinical success is dependent upon immunological suppression. Or by “tricking” the human immune system into recognizing a transplanted organ as part of its self rather than as “other” (Concar, 1994). In allotransplantation, the advent of the immunosuppressive drug cyclosporin proved enormously beneficial in halting the physiological rejection of the transplanted organ. Despite its clinical success however, the process of transplantation continues to be met with an analogous “cultural resistance” (Joralemon, 1995). Patients are finding that the biomedical representations of the body, inscribed in transplantation procedure and rhetoric, are discordant with their own embodied existence and the ongoing experience of restructuring the self. Allograft recipients cannot, therefore, always be “tricked,” at an emotional level, into the quiescent acceptance of a non-self organ. Within xenotransplantation, immunological discourses, which determine perceptions of the self, the non-self, the body, and its boundaries (Haraway, 1989; Martin, 1990), are given added poignancy as the new dimensions
of animal and human are thrown into the clinical arena. Although the creation of
the transgenic animal now makes the process of xenotransplantation
immunologically viable, individual and cultural resistance may, similarly, be more
tenacious. For in the process of prolonging human life, xenotransplantation has
resurrected hybridized forms of human and animal: a pastiche that has evoked a
complex history of human emotions (Davidson, 1991). As xenotransplantation
enters clinical trials, which emotions will be awakened by our latest prodigy? The
horror of monsters (Davidson, 1991)? Or the miracle of modern twentieth century
high-technology medicine?

Notes

1. Correspondence should be sent to Tania Woods, CSHSD, Department of Human
Sciences, Brunel University, Uxbridge, Middlesex, UB8 3PH, United Kingdom.
2. The use of the dramatic metaphor (Frankenberg, 1986) serves two primary purposes here.
First, it serves as a reminder of the cultural production of all scientific technology and
associated texts. Second, it highlights the multiplicity of discourses that emerge and
compete for credibility in all healing systems.
3. It should be made clear that this paper (Concar, 1994) did not necessarily represent the
views of the Working Party, either individually or collectively.
4. Following a Governmental advisory group on the ethics of xenotransplantation, the
British Government recommends that "there is insufficient knowledge about the known
viruses to make it safe to proceed to clinical trials (of xenotransplantation) at the current
time" (AGEX, 1997, p. 9).
5. Psychiatric and psychological specialists suggest that it is dysfunctional, pathological
and, thus, unnatural, when recipients identify with their donors or develop "psychiatric
complications." Sharp’s anthropological study, inverts this “dominant assumption [that]... behavior that is considered unusual or pathological may in fact be a natural response to unnatural circumstances” (Sharp, 1995, p. 361).
6. The British Government has recently proposed that “it would be ethically unacceptable
to use primates as source animals for xenotransplantation” (AGEX, 1997, p. 6). This is a
recommendation and not an absolute ban, which was felt to be premature in the light of
human needs.

References

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