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# Baby Fae: a beastly business

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## Authors' abstract

*The Baby Fae experiment has highlighted the growing trend in medicine of using animal parts in the treatment of humans. This paper raises the question of the logical and moral justification for these current practices and their proposed expansion. We argue that the Cognitive Capacity Principle establishes morally justified necessary and sufficient conditions for the use of non-human animals in medical treatments and research. Some alternative sources for medical uses are explored as well as some possible programmes for their implementation.*

Baby Fae, in her short life, highlighted a growing trend in medicine – the use of animal parts in the treatment of humans. While transplanting a baboon's heart into a baby girl is by far the most dramatic, it is only the latest of many occasions where animal organs have been put to work for our benefit. Surgeons already tap animals for so-called 'spare parts', using sheep intestine for surgical sutures, cow tendons and bones to replace human ones damaged in accidents, and heart valves from pigs to repair human hearts.

Our technical capacity to turn the bodies of animals into vehicles for growing replacement parts for humans appears limited only by the imagination of medical researchers who, in the wake of the Baby Fae experiment are hailing her operation as facilitating further animal experimentation. Their eagerness gives new imagery to the Orwellian notion of 'Animal Farm'. Already there is movement to establish baboon farms where colonies of primates can be raised to supply hearts for xenografts. Less modest minds enthusiastically envision unlimited possibilities in harvesting a variety of organs for human use (1).

Despite a perfunctory nod to the importance of respecting moral restraints in our relationships to animals, the prevailing sentiment overwhelmingly prefers human lives over those of animals. As reportedly articulated by Dr Leonard Bailey, Baby Fae's surgeon, we can either choose to let babies die or intervene and thereby sacrifice – regrettably – some lesser form of life (2).

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## Key words

Transplants; spare part surgery; speciesism.

What should we think of these alternatives? If we agree with a *Los Angeles Times* editorial that 'Medicine's goal is to reduce suffering and preserve life' (3) are we being too picayune to inquire as to *whose* pain and *what kind* of life?

Consider the following purposefully extreme fictional media report of the future. Examining it logically may offer a way of developing some much needed principles to govern cross-species transplantation:

*The National Bio-Research Foundation announces their colony of mentally handicapped persons being bred to become transplant donors has reached 2,500. Each year about 200 individuals are supplied to some 25 scientific facilities. Dr Homograft, a spokesman for the foundation, explains that the use of home-bred mentally handicapped humans rather than earlier simian candidates results in many more lives being saved and returned to normal functioning because of the vastly more compatible tissue matching in human-to-human procedures. Besides being medically superior, the mentally handicapped are also more plentiful since they procreate well in captivity. Dr Homograft emphasised that the donors were treated with respect at the foundation.*

This hypothetical report strikes us as unforgivably cruel and an abhorrent perversion of medical technology. It should be noted, however, that the language of the report is only slightly modified from descriptions of how baboons are presently raised for research in the United States. Is there a logical and moral justification for our lack of squeamishness regarding the use of primates and other non-humans; or, is our attitude simply a popular prejudice which favors 'us' as opposed to 'them'?

## Equality and Speciesism

In looking for fair treatment guidelines, morality demands that we presume equal treatment and that unequal treatment must be justified. This moral requirement is captured by the following Principle of Equality:

*The unequal treatment of X and Y, with respect to*

*distributions of benefits and burdens must be justified by a morally relevant difference between X and Y.*

We make use of this principle when, for example, we excuse very young children and severely mentally defective persons from the same legal and social responsibilities we demand of normal adults. The Principle of Equality is instantiated in cases where animal organs are used as follows:

*When X and Y are members of different species, the unequal treatment of X and Y, with respect to distribution of burdens at least, must be justified by a morally relevant difference between X and Y.*

In the matter of heart transplants and other xenografts, if we propose to treat humans in one way and non-humans in another we must be able to point to the differences between the two species that make unequal treatment morally permissible. For example, we have a conviction that it is morally permissible to kill an innocent insect but that it is not permissible to kill an innocent man; surely this conviction rests on something firmer than the mere fact that these living creatures happen to belong to different species. But until we can articulate some rational principle to guide our behaviour toward non-humans in research and experimentation we may simply be allowing our technical ability to run blindly ahead of the necessary moral reflection.

Our task, then, is to identify relevant characteristics that might morally justify treating animals in a manner we do not deem acceptable for humans. Some possible candidates must be discarded straightaway since they are characteristics shared by humans and non-humans alike; for example, animation and sentience, the capacity to suffer or experience enjoyment or pleasure. However, what does become increasingly pronounced, the higher one goes up the phylogenetic scale, is an entity's capacity for complex cognitions. Cognitive complexity here refers to the way an individual receives, stores, processes and transmits information. These capacities include such things as rationalisation, self-awareness, social interaction and the possession of consciousness.

Normal adult humans paradigmatically exemplify these traits; and it is their more advanced degree of cognitive ability that justifies some differences in treatment. If faced with the choice of giving a copy of *War and Peace* to an ape or to an adult human, for example, it would be reasonable to choose the latter since we assume the human has the ability to enjoy and benefit from the book, whereas the ape presumably does not. Suppose however, this ability was as lacking in the human as it was in the ape – a severely retarded person would be a case in point – under those circumstances preferential treatment would not be justified.

This raises the important point that where the usual difference between human and non-human *does not* exist, we cannot justify different moral treatment in the

distribution of either benefits or burdens. If we treat an individual human who lacks the cognitive ability humans normally possess, or are capable of developing, *as if* the quality were present, and consequently treat the human differently from an ape of the same level, then such an act would exemplify speciesism. That is, the act would allow unequal treatment of equally cognitive beings by an appeal *solely* to a difference in species. In contrast, the Principle of Equality demands that where a morally relevant difference between human and primate is absent, there is no moral justification, other things being equal, for treating the two with anything other than equal consideration.

The 'other things being equal' clause should not be disregarded since not only is the development of cognition a matter of gradation with respect to the phylogenetic scale, it is also a process in an individual's life. In this respect, potentiality becomes an issue. A child, incapable of discernment, possesses limited cognitive ability, as does a mental incompetent. But in contrast to the mentally impaired, under normal conditions, the child is potentially a fully cognitive being and must therefore be regarded as having a certain importance, if not because of what it is, at least because of what it might become. It is the view here that the stringency of our duty to preserve an entity is directly proportional to not only the individual's actual possession of complex cognitive skills, but its potential to achieve them as well.

How might what has been said so far apply to admittedly imaginary transplant cases? Let us suppose that there are three needy organ recipients. Each possible recipient needs a different organ (for example, a heart, a kidney and a liver), which according to all possible matching procedures, can best be supplied by either of the other two. Thus, in order to save two lives, one must be sacrificed; and, if the organs of one are not used for the remaining two, all three will die (4).

In the first scenario the three would-be recipients are two humans with normal cognitive capacities, one adult and the other a young child; the third is an adult baboon with full primate capabilities. Which organs should be used? Our duty to preserve the mature human is more stringent than our duty to preserve the life of the young child, since the former has full actual possession of value characteristics (5), whereas the latter does not, and the child does not have the potential to attain more value than the amount the adult already possesses (6). Our duty towards the human child is stronger than that towards the baboon because, although the latter may have more actual value than the former, the child has potentialities that far exceed those of the monkey. Thus, the baboon in this case is the best donor from a moral perspective.

The second situation consists of a normal human adult, but in this case the human child is retarded to the degree that its cognitive capacity is reduced to the same level as that of the baboon. As before, the adult human

would not be the appropriate donor for the reasons outlined above. The situation between monkey and child has significantly altered since, being of comparable cognitive capacities, both actual and potential, they now share an equal claim to the needed organs.

Equal claim would suggest that the matter could be decided by lot; but deciding an issue of such magnitude in some chance fashion seems radically counter-intuitive. Perhaps this appears so only because it is easy to imagine the child with a network of relationships all of which would suffer if the child dies, a fabric of concern assumed to be missing in the monkey's case. If this is factually true, then the child does have a higher claim based strictly on consequentialist grounds because of the adverse affect the child's use and death would have on others. But if it were possible to show that the baboon had a similar network, comparable in terms of warmth, interactions and attachments to those of the retarded human, then the balance would revert back to equal claim shared by monkey and child (7). And, if it could be demonstrated that the baboon had, in reality, a closer network of relations than the child (the latter being an orphan abandoned in an institution, for example), the shifting weight of the consequences would suggest the human child be sacrificed to benefit the baboon (8).

### **Morally permissible alternatives**

If we are correct that present transplant and research practices cannot rationally be defended, in what ways can our attitudes be changed to blur the distinction between valuing a human life while devaluing the life of a non-human with the same cognitive abilities? There are two possibilities that might be considered.

First, we could change our attitude towards our own species so that we would think it is morally permissible to use a human for research, experiment or operation only if we presently feel morally justified in using a non-human of equal cognitive capacity, or equal value, for the same procedures. By adopting this attitude we would not only condone the use of the baboon heart for Baby Fae, but we ought to be equally ready to take the heart of a mentally handicapped human of similar standing for her benefit. Few of us, however, are prepared to embrace such a radical departure from our present treatment of the mentally disadvantaged.

The second possibility would be to hold constant our present protective concern towards members of our own species, but change our attitudes toward animals so that we consider it morally permissible to use a non-human for research, experimentation or operation only if we would presently find it morally permissible to use a human with equal cognitive capacity for the same procedures. Viewed in this way, our inclination is to conclude that the baboon's heart could not be used for xenografts since we would not condone the sacrifice of a retarded human with equal cognitive capacity.

Thus, two conclusions can logically be drawn. The first, considerably more radical than current practice,

allows the use of mentally retarded adults in medical experiments; while the second, more conservative than current practice, prohibits the use of fully cognitive primates in such experiments.

Since prudence dictates that where there is doubt on a moral issue, it is best to take the more conservative position; and since there is a general inclination not to use innocent life wantonly, we presume that the stronger claim is towards changing our behaviour towards non-humans more equally to reflect the concern and protection which we currently feel is warranted towards members of our own species of comparable cognitive level.

By conjoining the alternatives described above, it is possible to establish both necessary and sufficient conditions for the use of non-human animals. Such a principle would stipulate that:

*It is morally permissible to use non-humans for research, experiment and operations if and only if we would feel morally justified in using an adult human of equal cognitive capacity for the same research, experiment or operation.*

In applying the above Cognitive Capacity Principle to the question of Baby Fae and her transplanted baboon heart, we should have to ask if it would be morally permissible in such circumstances to substitute the heart of a mental incompetent whose cognitions could not exceed those of the monkey. If we are not prepared to use such humans as a means for our ends, to use their organs as if they were 'spare parts', we have no basis for treating non-humans of like cognitive capacity in a different manner.

### **Animals: individuals or interchangeable?**

Equal consideration results from the acknowledgement that certain characteristics are valuable regardless of where they are found. These are the characteristics that make it possible for a creature to have an *individual* life as opposed to being merely a replaceable member of a species (9). It is not arbitrary to hold that beings which possess a cognitive level of sufficient complexity to allow them to conceive of themselves as distinct individuals existing over time, with some appreciation of events as they happen to and affect them, and the psychological attributes necessary to desire to continue living, are more valuable than creatures without these capacities.

As opposed to self-aware entities, leading lives of their own (for example, primates, whales, dolphins), there are vast numbers of species whose members are virtually indistinguishable from one another (for example, fish and reptiles). The members of such species lack the conception of themselves as living beings with a future, and can thus be viewed as interchangeable receptacles of pleasurable and painful experiences. Their sentience entails that they do have interests that count; but, if upon their death they are replaced by another member of their species whose life

is equal in pleasure it would be difficult to see where there has been an overall loss.

There seems to be no reason to believe that leading an individual life need be limited to a certain body-type or linked to any particular appearance. Rather than being species specific, this ability is a function of structure, predicated on a level of mental development which depends upon an intact nervous system of a certain complexity. And while the mentally handicapped and some higher order animals share the qualities of individual value, albeit in a more rudimentary way than normal human adults, this in no way mitigates against the fact that to the extent that entities, despite their species, share a comparable capacity for the self-awareness that makes individual lives possible, they have an equal right to have those lives protected.

Whether or not the proposed Cognitive Capacity Principle is unrealistic is a serious question. It is certainly not impossible to put into practice; but how likely is it that it might actually be implemented? There are some signs for optimism. There is increasing challenge to the prevailing view that non-humans, as creatures of inferior moral status, can be made to suffer extremely painful or lethal scientific experiments for no reason other than our own bare-faced preference for our own species (10).

Also, we do have a dramatic example of a conversion in thinking regarding the once accepted practice of slavery where one group exploited another purely for its own advantage. Like researchers today, slave owners empathised with their slaves to a certain degree, agreeing that they should not be mistreated; and there was a certain code of ethics as to how slaves should be treated, in much the same way that experimenters today have codes regarding the treatment of animal research subjects.

Some would say that our change in attitude towards slavery was easier to come by since it is simpler for people to change their minds regarding members of their own species with whom they can more easily identify. History shows, however, that it is difficult to overestimate the ability of people, particularly power groups, to see differences between themselves and other humans.

Keeping in mind the growing debate, and how far we have come in our moral thinking, it is possible that at some future time, regarding animals as organ incubators available for human use will be thought of with the same repugnance with which the reader undoubtedly responded to the hypothetical report at the beginning of this paper, wherein some humans, because of a mental handicap were being bred as organ donors – even though we had the assurance of their keepers they were treated with ‘respect’.

### Other sources for medical uses

It would seem, however, that if we restricted organ

donors and research subjects to volunteers plus those creatures without the capacity for individual lives, future transplants and experiments would have to be greatly curtailed. Most organisms that fall below the level of self-awareness are in fact so different from our own species that they are essentially useless for those purposes.

There are some alternatives, however, which not only eliminate some of the moral dilemmas discussed here but at the same time actually enhance the practical possibilities for success. Specifically, why not use individuals who have suffered brain death, patients in irreversible comas, and infants born with anencephaly (11)? None of these groups possess, either actually or potentially, the cognitive capacities that would make it possible for them to lead individual lives as they have been discussed above.

Currently those who meet the criteria for brain death, which in the United States requires the entire brain including the brain stem to be dysfunctional, are used as organ donors but not for invasive research procedures. If these cadavers are considered appropriate sources for organs and other body tissue, there appears no logical difference in using them also for research in place of the conscious, rational, sentient beings presently sacrificed for these purposes.

Permanently comatose individuals, while not meeting the criteria for brain death either in the United States or in Britain, since they do have minimal brain stem activity, are maintained indefinitely on respirators or, as Karen Ann Quinlan did for so long, breathe on their own but with no hope of recovering consciousness.

While there seems no defensible reason why in the case of irreversible coma the individual could not be used for both organ donation and experimental research, there are two caveats that need to be considered. First, because perception of pain may involve the cerebral cortex and in irreversible comas there may be some degree of cerebral function, the degree to which this is an actuality in any particular case would have to be taken into consideration to ensure procedures would be painless. Secondly, when children are involved the determination of irreversible coma is much more difficult to ascertain. What can count as reasonable medical certainty in adults may not be applicable in children. For this reason, children who appear to be permanently comatose should not be included in either the organ donor or research subject categories.

There are, however, children who would qualify as both organ donors and research subjects: anencephalic infants. Because the entire cerebral cortex is missing in these children, there can be no perception of pain. Thus, the precautions that would apply to irreversibly comatose adults used for research would serve no purpose in these situations (12).

The proposal advanced here regarding the brain dead, irreversible comas and anencephalic infants could be implemented under (i) a compulsory

programme, (ii) a presumptive programme allowing exceptions, or (iii) a consent programme. Under a compulsory programme, the brain dead, the irreversibly comatose, and anencephalic infants would be used automatically and irrefutably as organ donors and research subjects where appropriate. Such a programme has the advantage of providing an abundant stock of donors and subjects which might facilitate important and useful medical advances. However, the programme's disadvantages undoubtedly militate against its implementation: violation of religious freedom, denial of First Amendment rights and excessive State intrusion in individuals' lives and deaths.

Under a presumptive programme allowing exception, the brain dead, the irreversibly comatose, and anencephalic infants would be presumed to be available for use as organ donors and research subjects, but the presumption would be rebuttable. That is, such subjects would be routinely available for the appropriate medical experimentation unless they had previously registered their objection or, possibly, members of their immediate family had registered such an objection. Such a programme mitigates the disadvantages of a compulsory programme, while producing more subjects for medical transplant and experimentation than those provided by a pure consent programme.

Under a consent programme, the brain dead, the irreversibly comatose and anencephalic infants would be presumed not to be subjects for medical experimentation unless they had registered prior willingness. (In the case of infants or young children the consent of immediate family members would serve as a substitute.) Such a programme supports individual autonomy, but would probably result in far fewer available subjects for medical experiments than the first two programmes.

We have no vehement objections to the implementation of a presumptive programme allowing exceptions *provided* that all potential subjects and their families have ample prior opportunity to register their objections to their potential use as subjects in medical transplants and experiments. However, we fear that in practice the poor, the uneducated, and the politically and legally disenfranchised would bear a disproportionate burden under such a programme. In effect, it is likely that only the advantaged segments of society would be aware of their options and the details of registering formal objections to a State programme. Accordingly, only the advantaged segments of society would truly be in a position to exercise the autonomy so highly valued by advocates of this programme.

A consent programme – the most conservative of our three possibilities – is our preferred selection. Contrary to our immediate intuition, such a programme might well produce an adequate number of subjects for medical transplants and experimentation if its implementation was supplemented by massive public education and vigorous support on the part of the medical community. Taking what would seem to be

the most difficult case, the anencephalic infant, there is reason to believe that parents of children so afflicted may be more willing to offer consent than commonly assumed. Those physicians who discuss organ donation with grieving parents, whose child only hours before was alive and healthy but who must now grapple with a fatal accident, can only be enormously moved by parental willingness to give their child's organs to benefit another child (13).

While it is true that under this consent programme the advantaged segments of society would probably bear a disproportionate burden (14), their members would have done so under conditions facilitating autonomous choice. However, if the optimism we have lavished on consent programmes turns out to be misplaced and an inadequate number of subjects are produced under our prescribed strategy, then we advocate the implementation of a presumptive programme allowing exceptions (providing that the safeguards alluded to previously are also implemented).

Returning to the case of Baby Fae, it might well be asked if receiving a heart from one of the thousand or so anencephalics born each year in the United States would have been a better choice for her, not to mention her monkey donor. Her case is illustrative of how a rethinking of which bodies can truly be said to have 'spare parts' may result not only in logical consistency and moral clarity, but medical practicality as well (15).

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## References and notes

- (1) *Time* 1984 Nov 12: 72.
- (2) *The Miami Herald* 1984 Oct 28: 26A.
- (3) *Newsweek* 1984 Nov 12: 118.
- (4) The arguments against vitalism, the view that life *per se* is not only valuable but sacred, have been presented to our satisfaction elsewhere and need not be reiterated here. See for example, Singer P. *Practical Ethics*. Cambridge University Press: Cambridge, 1979: 90–92 and *Animal Liberation*. Random House: New York, 1975: 21–24. Also Rachels J. Euthanasia. In: Regan T, ed. *Matters of life and death*. Temple University Press: Philadelphia, 1980: 45–50. Neither do we subscribe to one of the elements of vitalism that contends because all life is sacred no decision can be made; and, in a dilemma as the one described here, there can be no intervention such that one life is used for the sake of another.
- (5) We are taking the possession and exercise of the relevant cognitive capacities as our criteria of value.
- (6) Our conviction might change if the 'mature human' were in a condition so as to make it unlikely that he or she would be able to exercise value characteristics for very much longer.
- (7) We recognise the practical problem researchers would face in trying to assess whether in any given situation a primate could be reasonably said to have complex social

relationships. However, there is evidence to suggest that at least some of the higher animals, like primates, do indeed have a network of social connections. Ethologists and others who study animals in their natural environments are far more likely, for just this reason, than laboratory researchers to support restrictions on animal use. See, for example, Goodall J. *In the shadow of man: Boston, Ma*: Houghton Mifflin, 1971. Because of this documentation we urge researchers to assume a network of animal inter-relationships in the calculus.

- (8) Other kinds of consequences could also be postulated in order to argue in favour of one or the other.
- (9) See, for example, reference (4): Singer: 99–103.
- (10) In addition to the Singer and Rachels works already cited, see also, Sechzer J A, ed. *The role of animals in biomedical research*. Cornell Medical College: New York, 1983.
- (11) For discussions of related issues see Gaylin W. Harvesting the dead. *Harper's magazine* 1974 Sept and Feinberg J. Sentiment and sentimentality in practical ethics. *Proceedings and addresses of the American Philosophical Association* Sept 1982 56, 1: 32–42.
- (12) A very legitimate point could be raised as to whether anencephalics might not be subject to thalamic pain such as that experienced by individuals who have cortical lesions, but with the thalamus intact. This has been particularly well known in individuals who have had a cortical resection for the treatment of intractable pain but who unfortunately as a result suffer from pain even more diffuse and agonising. In response, Walter Freeman, MD, Professor of Physiology, University of California, Berkeley, points out that in the case of

anencephalics, the neothalamus is as underdeveloped, or nonexistent, as is the neocortex; therefore, the 'pain centre' in the thalamus is no more likely to exist than those cortical centres which are responsible for pain perception. Consequently, it is quite likely that the kind of pain experience that would be accessible to anencephalics is that of the decerebrate animal or human as distinct from the decorticate animal or human. In the decerebrate state, it is very common to see reactions to painful stimuli which are in the nature of reflex responses which can suggest to an uninformed observer that there is an experiencing of pain but there is no evidence that such experiences actually exist.

- (13) Donald Buckner, MD Chief of Pediatric Surgery, University of Miami School of Medicine. Personal Communication.
- (14) This is likely because the advantaged segments of society undoubtedly would be more aware of the possibility and procedure for registering consent to this State programme.
- (15) No doubt slippery slope arguments will be brought forward to charge that this suggestion opens the flood gates for physicians to commit all sorts of atrocities in the use of infants and others *not* beyond the hope of consciousness. While all slippery slope arguments should be duly considered, they are extremely speculative and only illustrate that wrong decisions can be made either intentionally or unintentionally. It should also be mentioned that the force of slippery slope arguments alone is almost never conclusive in ruling against the legitimacy of a moral principle.

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- (1) Boorse C. On the distinction between disease and illness. *Philosophy and public affairs* 1975; 5: 49–68.
- (2) Campbell E M, Scadding J G, Roberts R S. The concept of disease. *British medical journal* 1979; 2: 757–762.
- (3) Kennedy I. *The unmasking of medicine*. London: George Allen and Unwin, 1981; 1–25.
- (4) Margolis J. The concept of disease. *Journal of medicine and philosophy* 1976; 1: 238–255.
- (5) Engelhardt H T. Ideology and etiology. *Journal of medicine and philosophy* 1976; 1: 256–268.
- (6) Engelhardt H T. The concepts of health and disease. In: Engelhardt H T, Spicker S F, eds. *Evaluation and explanation in the biomedical sciences*. Dordrecht: Reidel, 1975; 125–141.
- (7) Toon P D. Defining 'disease' – classification must be distinguished from evaluation. *Journal of medical ethics* 1981; 7: 197–201.
- (8) World Health Organisation. International classification of diseases, vol 1. Geneva: World Health Organisation, 1977; 204. (Available from Her Majesty's Stationery Office, HMSO).
- (9) Cited by Kennedy I. See reference (3): 1.
- (10) See reference (8): 196.