

# A Submission to the House of Lords Select Committee on Stem Cell Research

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## The Linacre Centre for Healthcare Ethics David Jones

### Summary

S.1 There are scientific aspects of cloning and stem cell research which need to be clarified before ethical questions are posed. In particular, it seems that research on adult stem cells is comparably advanced to and perhaps more promising than research on embryonic stem cells. Further, the results of attempting to clone non-human animals cast serious doubt on the safety of cloning for transplantation, as well as cloning for birth (see sections 1.1.1-2.4.1).

S.2 Human beings are animals (of a special sort) who begin to exist when the individual organism begins to exist. The universal *terminus a quo* in developmental biology is fertilisation. The development of the placenta and other foetal organs does not undermine the significance of fertilization as the normal beginning of the human organism, and neither does the phenomenon of identical twinning, if this is correctly understood (see sections 3.1.1-3.2c.6).

S.3 The basis of the concept of human rights is that there is a minimum respect which is due to all human beings simply in virtue of their being human. This represents the rejection of the possibility of a natural human underclass (consisting of slaves, the disabled, women, children, or those of 'lesser' races). The humanity of embryonic human beings entitles them also to a minimum human respect, despite the evident differences between human embryos and older human beings (see sections 3.3a.1-3.3b.7).

S.4 The human rights of the embryo include the right not to be attacked, used or commercialized, and the right to a certain care from the genetic parents. It is irresponsible to allow one's genetic material to be used to create an embryo who has no chance of implantation. IVF for research and cloning for research are wrong for similar reasons, whereas cloning for birth is wrong for other reasons (see sections 4.1.1-4.6.7).

S.5 The Helsinki Declaration on Medical Research Involving Human Subjects condemns research which is without the consent of the subject, harmful to the subject or which subordinates the interests of the subject to the interests of science and society. In cases of genuine doubt concerning the humanity of the subject one should err on the side of caution. A significant body of scholarly opinion to the effect that embryos are human beings constitutes a reasonable doubt concerning their supposed subhuman status. Human embryos should therefore be protected by law (5.1.1-7).

S.6 Human cloning for research and a major expansion of research on IVF embryos are being permitted in the face of international condemnation when it is far from evident that there is an urgent necessity to justify such dramatic moves. Such practices are likely to lead to cloning for birth, to further erosion of public confidence in the ethics of scientific research, and to an invidious promotion of treatments which many patients will regard as unconscionable. Cloning should be prevented before the regulations come into effect (5.2.1-5.4.1).

## 1. Introduction

### 1.1 Stem cells

1.1.1 Stem cells are versatile cells in the body which are able both to reproduce themselves and to produce more specialized cells. As such, they are of great potential value in repairing and regenerating damaged cells and tissue. Many conditions are currently or potentially treatable with the use of stem cells, including Alzheimer's, Parkinson's, heart disease, stroke and diabetes.

1.1.2 Stem cells can be obtained from various sources. They can be obtained from the early human embryo, from the older human embryo or foetus, from the newborn baby (e.g. from the umbilical cord), from the older child and from the adult. As the individual develops, it is thought that stem cells become more committed to a particular destination in the body; however, some degree of flexibility appears to be retained. (We will be looking in the next section (2.1) at the clinical potential of adult versus embryonic cells.)

### 1.2 Embryonic stem cells

1.2.1 Embryonic stem cells can be obtained from the human embryo or foetus during or after an abortion, or after a miscarriage. They can also be obtained from the early human embryo after in vitro fertilisation (IVF) or similar procedures. The IVF embryo may be 'spare', *i.e.* surplus to the infertile couple's requirements. Alternatively, the embryo may be specifically created for experimental use.

### 1.3 Cloning

1.3.1 Embryos may very soon be created for experimental use by means of cloning. In this procedure, the nucleus of an unfertilised ovum is replaced by the nucleus of a body cell

from an existing human being. The ovum is then stimulated to create an embryo. As the nucleus contains almost all of the cell's genetic material, the embryo created is the clone or twin of the human being from whom the nucleus was taken, and could be used as a source of stem cells for research and eventual transplantation.

1.3.2 Cloning for research is sometimes described as therapeutic as opposed to reproductive cloning. In 'reproductive' cloning, the clone is transferred to the body of a woman and allowed to go to term. It should be noted that the cloning procedure itself is identical for 'reproductive' and 'therapeutic' cloning: the only difference lies in the purpose for which the clone would be created.

1.3.3 The terms 'reproductive' and 'therapeutic' in this context are misleading.<sup>1</sup> 'Therapeutic' cloning is not therapeutic for the clone, who will die in the course of its cells being taken when it is 5-7 days old. Such cloning *is*, moreover, reproductive, since it involves the creation of an embryo, although this embryo will not survive to the point of being born. Supporters of cloning have conceded that the clone embryo is a human organism: an early human life.

1.3.4 In this Submission, we will be referring not to 'therapeutic' and 'reproductive' cloning, but to cloning for birth, and cloning for research / transplantation.

## 2. Scientific issues

### 2.1 Adult stem cells

2.1.1 Until recently, it was thought that stem cells could rarely be found in

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<sup>1</sup> Finnis, J. (2000) 'Some fundamental evils in generating human embryos by cloning' in Mazzoni, C.M. (2000) *Etica della Ricerca Biologica* Florence: Leo S. Olschki.

adult tissue. However, this view has been conclusively disproved. The last twelve months have seen an explosion of information on adult stem cells (the term is often used to include stem cells from, for example, newborn babies). Adult stem cells have, in fact, been given to patients for decades in the course of bone marrow transplants, and new trials on patients using adult stem cells have had positive results.

2.1.2 It is clearly best if the cells used in transplantation can be taken from the patient him- or herself, to avoid rejection by the body. While embryonic cells have been proposed as a means of avoiding rejection problems, even early embryonic cells have surface molecules which can cause an immune response.<sup>2</sup> Supporters and opponents of embryonic stem cell research are in agreement that the ultimate goal should be to use the patient's own cells.

2.1.3 There are various ways in which adult cells can be used. They can be taken from the patient, or a donor, and used without being modified, as in the case of bone marrow transplants for patients with cancer. Alternatively, stem cells from the patient can be subjected to gene therapy before being re-introduced, as in the case of children who were treated recently for Severe Combined Immune Deficiency.<sup>3</sup>

2.1.4 Stem cells can be induced to carry out a new role in the body, as when a patient with heart disease was given stem cells from muscle in his leg, which then formed a different kind

of muscle in his heart.<sup>4</sup> It is known that adult bone marrow cells are particularly versatile, and can produce bone, cartilage, tendon, muscle, fat, liver and neural cells. Neural stem cells can also form other cell types, such as blood and muscle cells.

2.1.5 Finally, there are ways of treating stem cells while they are still in the body of the subject. In animal studies, positive results have been obtained by adding the proper growth signal to the injured brains of rats, so that their own stem cells could proliferate.<sup>5</sup>

2.1.6 Treatments of human patients using adult cells are already yielding results. Successful treatments have been carried out on children with cartilage defects,<sup>6</sup> patients with corneal scarring,<sup>7</sup> and patients with lupus,<sup>8</sup> systemic sclerosis<sup>9</sup> and rheumatoid

<sup>4</sup> Associated Press (2000) 'Approach may renew worn hearts', Nov 12. See also Wang, J.S. *et al.* (2000) 'Marrow stromal cells for cellular cardiomyoplasty: Feasibility and potential clinical advantages', *J Thorac Cardiovasc Surg* 120, 999-1006, Nov; Scorsin, M. *et al.* (2000) 'Comparison of the effects of fetal cardiomyocyte and skeletal myoblast transplantation on post-infarction left ventricular function', *J Thorac Cardiovasc Surg* 119, 1169-1175, 6.

<sup>5</sup> Tuszyński, M.H. (2000) 'Intraparenchymal NGF infusions rescue degenerating cholinergic neurons', *Cell Transplant* 9, 629-636, Sept/Oct.

<sup>6</sup> Horwitz, E.M. *et al.* (1999) 'Transplantability and therapeutic effects of bone marrow-derived mesenchymal cells in children with *ontogenesis imperfecta*', *Nat.Med.* 5, 309-313, March.

<sup>7</sup> Schwab, I.R. *et al.* (2000) 'Successful transplantation of bioengineered tissue replacements in patients with ocular surface disease', *Cornea* 19, 421-426, July.

<sup>8</sup> Traynor, A.E. *et al.* (2000) 'Treatment of severe systemic *lupus erythematosus* with high-dose chemotherapy and haemopoietic stem-cell transplantation: a phase 1 study', *Lancet* 356, 701-707, August 26.

<sup>9</sup> Martini, A. *et al.* (1999) 'Marked and sustained improvement 2 years after

<sup>2</sup> Cells from a clone embryo would, of course, be more compatible with those of the patient.

<sup>3</sup> Cavazzana-Calvo, M. *et al.* (2000) 'Gene therapy of human severe combined immunodeficiency (SCID)-X1 disease', *Science* 288, 669-672, April 28.

arthritis.<sup>10</sup> A number of cancers have been successfully treated using adult cells, including metastatic retinoblastoma, which has a poor prognosis with conventional treatments.<sup>11</sup>

## 2.2 Embryonic stem cells

2.2.1 How do these achievements using adult cells compare with those made using embryonic cells? It should be noted that cells from early embryos have not so far been used on patients, and appear too unspecialised to control, unless modified in some way.<sup>12</sup> We are some years away from any treatment using early embryonic cells.

2.2.2 Where stem cells from foetuses have been transplanted into patients along with other tissue the results have not been altogether positive. Even foetal cells can be difficult to control, and it is feared that embryonic stem cell transplants could give rise to cancer. In one case, a man with Parkinson's died after a transplant of foetal cells; it was later found that these cells had given rise to bone, skin and hair in the patient's brain.<sup>13</sup>

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autologous stem cell transplant in a girl with system sclerosis', *Rheumatology* 381, 773, August.

<sup>10</sup> Burt, R.K. *et al.* (1999) 'Hematopoietic stem cell transplantation of multiple sclerosis, rheumatoid arthritis, and systemic lupus erythematosus', *Cancer Treat. Res.* 101, 157-184.

<sup>11</sup> Dunkel, I.J. *et al.* (2000) 'Successful treatment of metastatic retinoblastoma', *Cancer* 89, 2117-2121, Nov 15.

<sup>12</sup> In the case of cells from older embryos or foetuses, scientists are experimenting with 'embryoid body-derived' cells created from embryonic cells, which seem easier to control (Shamblott, M.J. *et al.* (2001) 'Human embryonic germ cell derivatives express a broad range of developmentally distinct markers and proliferate extensively *in vitro*', *Proc Natl Acad Sci USA* 98, 113-118, Jan 2).

<sup>13</sup> Folkerth, R.D., Durso, R. (1996) 'Survival and proliferation of non-neural tissues, with

2.2.3 A recent clinical trial did find some improvement in younger Parkinson's patients (those aged 60 or less). However, in 15% of those treated the patient developed permanent uncontrollable movements such as writhing, head-jerking and constant chewing.<sup>14</sup> One patient now has to be tube-fed, so severe are his symptoms.

2.2.4 In animal experiments, there have been some favourable results using embryonic cells. However, there are technical problems involved in keeping human embryonic stem cells alive, and in making them differentiate along the right lines. A trial in which cells from human embryos were transplanted into rats found that these cells did not readily differentiate into brain cells. Instead, they stayed together in a disorganized cluster, and nearby cells began to die.<sup>15</sup>

2.2.5 While it is too early to say whether embryonic or adult stem cells will ultimately prove more effective, there is more current evidence of usefulness in the case of adult cells. Statements to the contrary may owe more to external pressures - political or commercial - than to the scientific data. To quote the journal *Science* in December 2000, 'the human embryonic stem cells and fetal germ cells that made headlines in November 1998 because they can, in theory, develop into any cell type have so far produced relatively modest results. Only a few papers and meeting reports have

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obstruction of cerebral ventricles, in a Parkinsonian patient treated with fetal allografts', *Neurology* 46, 1219-25.

<sup>14</sup> Weber, W., Butcher, J. (2001) 'Doubts over cell therapy for Parkinson's disease', *Lancet* 357, 859, March 17.

<sup>15</sup> Vogel G. (2000) 'Stem Cells: New Excitement, Persistent Questions', *Science* 290, 1674, 1 December.

emerged from the handful of labs that work with human pluripotent cells.<sup>16</sup>

### 2.3 Cloning for birth

2.3.1 Cloning for birth has been carried out in various species of mammal, including sheep, cows, mice, pigs and goats. However, it is very difficult to produce a healthy animal by cloning. Problems arise at every point: in producing embryos by cell nuclear replacement, in bringing these embryos to term, and in obtaining healthy live-born offspring. There is a high rate of miscarriage of clones, throughout the period of gestation, and a high rate of neonatal death. Major fluid retention in the gestating mother has also been observed.

2.3.2 Abnormalities in clones include developmental delays, heart and lung defects, malfunctioning immune systems, and excessive size. Genetic errors in the clone can cause unpredictable problems at any stage. Some mouse clones, after growing to the equivalent age in humans of thirty, suddenly become obese.

2.3.3 Despite these problems, there are those who wish to carry out cloning for birth in human beings. Fertility specialists Panos Zavos and Severino Antinori plan to clone for birth within the next two years. Zavos claims it will be possible to identify abnormalities at the embryo stage, so that abnormal embryos can be discarded. However, experts in animal cloning have suggested that this cannot be done, since there is no test for determining whether genes in the embryo have been properly reprogrammed.

### 2.4 Cloning for transplantation

2.4.1 The high rate of serious abnormality in animal clones gives us

reason to fear the effect on patients of transplanting into them genetically abnormal cells from an embryonic clone. In general, embryonic cells are unstable and difficult to control because of their pluripotency. Cells from a cloned embryo, prone to genetic abnormality, raise still more difficulties. In any case, the great expense involved in cloning, and the need for a large number of human eggs, would be major impediments to its clinical use.<sup>17</sup>

### 3. Status of the human embryo

#### 3.1 What is a human moral subject?

3.1.1 Morality and law are concerned with the respect that is due to human beings as moral subjects. People are not reducible to the sum of their physical parts or their biological drives. Mature and competent human beings can make decisions for themselves, for which they are held responsible both morally and legally. Furthermore, *all* human beings are members of the human community, whether or not they have come to full maturity, and all share a common humanity.

3.1.2 No human being is to be thought of as a *mere* physical object or a *mere* animal, for all possess a common dignity or significance that is not shared with any other animal.<sup>18</sup> However, it is also important to stress that human beings *are* animals - of a particular sort. We should not think that the real person is a ghostly spirit

<sup>17</sup> Aldous, P. (2001) 'Can they rebuild us?' *Nature* 410, 622-623 April 5.

<sup>18</sup> However, it is not necessary for this argument to question whether, and if so to what degree, these personal characteristics might be shared by another species. The presence of one or even several 'fellow travellers' does nothing to undermine the intrinsic worth or dignity of specifically *human* life, and it is this that is at issue here.

<sup>16</sup> Ibid.

inside the head (the mind or consciousness) or a demon who has taken possession of a body - as though the living human body were one thing and the person were something else. This would degrade the human significance of the body and undermine the conviviality and bodily communication that help to constitute the human world.

3.1.3 The Greeks defined a human being as a 'rational animal' and this seems to capture something of the essence of a human being, as long as we are careful not to define 'rational' in too narrow a fashion. Similarly the philosopher Boethius defined a subject (*persona*)<sup>19</sup> as an individual being which has a rational nature: *persona est rationalis naturae individua substantia*.<sup>20</sup> These definitions have the great virtue of simultaneously acknowledging the unity and the transcendence of the human individual.<sup>21</sup> The human being is not two things joined together (a thinking thing and a physical thing) but one whole being.

3.1.4 It may seem that in the modern Western world, there is little danger of 'dualistic' ideas posing a real threat. However, there seems to be something in the Western way of life and in modern culture that encourages, on the one hand, a view of political and technological freedom as unlimited by

any rules concerned with human nature and, on the other, a view of the body as purely mechanical and empty of any intrinsic human significance.

3.1.5 The human moral subject is the human being, who is, essentially, a very special animal. We should not be afraid to admit that we are animals, members of the species *homo sapiens*, and that our lives are the lives of *these* living human bodies.<sup>22</sup> Human individuals are *biological* individuals. The question nevertheless arises: when and how does this human individual come to be? And does he or she possess full human moral status from the very beginning?

## 3.2 When does the human individual begin?

### 3.2a Fertilisation

3.2a.1 In species which reproduce sexually, a new organism comes to be with the successful fusion of the gametes. This is a rule that applies not only to human beings but reflects the very nature of sexual reproduction. The offspring are genetically distinct from the parents, so that the moment of generation of the new individual is clearly defined. 'Fertilisation is the process whereby the two sex cells (gametes) fuse together to create a new individual with genetic potential derived from both parents.'<sup>23</sup>

3.2a.2 If the distinction between gametes and embryo is clearly defined, so too is the continuity between the single-cell zygote and the multicellular adult organism. 'In nearly all cases the

<sup>19</sup> We are using the term 'subject' rather than 'person' because there are now so many conflicting meanings of 'person' that the word often confuses rather than clarifies discussion.

<sup>20</sup> *De duabus naturis*, c.3; cf. Thomas Aquinas *Summa Theologia* Ia Q. 29 art. 1.

<sup>21</sup> Not only classical philosophers but also many great philosophers of the twentieth century have attempted to hold together the unity and the transcendence of human beings, and so avoid the twin errors of 'reductionism' and 'dualism'. Examples are Whitehead, Wittgenstein (both early and late), Heidegger, Husserl and many modern followers of Aristotle and Thomas Aquinas.

<sup>22</sup> Flew, A. (1978) *The Rational Animal* Oxford: Clarendon Press; Midgely, M. (1979) *Beast and Man* London: Methuen; Braine, D. (1992) *The Human Person: Animal and Spirit* Notre Dame, Indiana: UNDP; Olson, E. (1997) *The Human Animal* Oxford: OUP.

<sup>23</sup> Gilbert, S. (1997) 5th ed. *Developmental Biology*, New York: Sinauer Assoc, p. 121.

development of a multicellular organism begins with a single cell - the fertilised egg, or zygote.<sup>24</sup> While there are identifiable stages in the process of division, pattern formation and differentiation, the process itself is gradual and continuous. If one asks when and how development *begins*, the biological answer is clear: 'development begins with the fertilised egg, which is a single cell, giving rise to a number of smaller cells.'<sup>25</sup>

3.2a.3 Progress within the science of developmental biology has done nothing to displace this most fundamental of starting points. The basic biological outlines of human development are not controversial: fertilisation initiates a cascade of developmental events and is the universal *terminus a quo* for considering embryonic development. The fertilised ovum, termed a *zygote* (the single-cell phase) or a *conceptus* (the general term for the product of conception), is also termed an *embryo* from fertilisation until the end of the second month when it is designated a *foetus*. Thus, from a biological perspective, the product of fertilisation is a new organism, an embryo in the process of development. 'After these gametes combine, a new organism begins to develop.'<sup>26</sup>

### 3.2b *The embryo and its placenta*

3.2b.1 Biologists generally consider the new individual organism to begin with fertilisation. Fertilisation is a *process* that takes time - in human beings it takes about 24 hours from the first contact between the ovum and spermatozoon to the union of the

chromosomes ('syngamy') and the first cell division - yet there is a point within this process when the most significant phase has been accomplished (when the process is essentially complete). From this point a new biological organism exists. However, some people have suggested that the embryo does *not* begin to exist when fertilisation is complete. They point out that most of the cells of the *conceptus* (95% at the 64 cell stage) go to make the placenta and amniotic sac, and claim that, until the embryo 'proper' is clearly differentiated from these other structures, the human individual does not yet exist.

3.2b.2 These critics are right in saying that the distinction between the placenta and the embryo 'proper' is not present immediately after conception. The placenta takes time to develop. However, they are mistaken in thinking that this distinction is a distinction between the embryo and something else. The placenta belongs to the embryo; it is an organ of the embryo by which it takes nourishment from its mother. If the amniotic sac and the placenta are understood as parts or organs of the embryo, then the appearance of these structures will be no more or less significant than the genesis of other embryonic structures. A new identifiable human individual already exists from the beginning, before these specialised structures start to appear.

### 3.2c *Identical twinning*

3.2c.1 A second phenomenon is more difficult to comprehend. Whereas most embryos develop into a single adult organism, a small number (0.3%) undergo division at an early stage so as to produce identical (or 'monozygotic') twins. The process of identical twinning is often thought to demonstrate conclusively that the early

<sup>24</sup> Gilbert (1997) p. 3.

<sup>25</sup> Wolpert, L. (1991) *The Triumph of the Embryo* Oxford: OUP, p. 11.

<sup>26</sup> Walbot, V., Holder, N. (1987) *Developmental Biology* New York: Random House, p. 26.

*conceptus* is not an individual. If a biological object is to be described as an individual organism it requires a certain level of integration, such that it is not just a collection of cells held together mechanically but a single integrated unit. Some claim that the phenomenon of identical twins shows that the early *conceptus* is not a unitary organism but only a loose collection of cells yet to develop into an organism or organisms.

3.2c.2 A survey of textbooks of developmental biology shows that the embryo is more than an aggregate held together by mechanical forces. 'From the outset, the cells of the embryo are not only bound together mechanically, they are also coupled by gap junctions.'<sup>27</sup> Nor do biologists regard the phenomenon of twinning as something to be explained as the breaking up of a loose aggregate. They regard twinning as evidence of a *power* possessed by the embryo to redirect cells that normally would have contributed to only a portion of the embryo, a power they term regulation.<sup>28</sup> This is a power of the embryo as a *whole*, rather than of individual *cells*. 'Since early vertebrate embryos show considerable capacity for regulation and many of the cells are not determined, this implies that cell-cell communication must determine cell fate.'<sup>29</sup>

3.2c.3 Identical twinning is an exceptional event proving the rule that, in general (in 99.7% of cases), only one foetus develops from each zygote. Where identical twinning does occur, the twinning event (whatever this is)

<sup>27</sup> Alberts, B. *et al.* (1989) *Molecular Biology of the Cell* 2nd ed. New York: Garland Publishing, p. 881.

<sup>28</sup> Gilbert (1997) p. 186.

<sup>29</sup> Wolpert, L. (1998) *Principles of Development* Oxford: OUP, p. 80.

triggers the formation of one or more discrete organized wholes, each in the process of development.<sup>30</sup> Each newly generated twin then continues as a well-formed individual. It does not form just half a foetus, nor does it grow wildly as a teratoma. Both in singletons and in identical twins, early human embryology shows a strong commitment to the development of distinct organized individuals.

3.2c.4 Biologically speaking, the early embryo is a well-integrated whole which, even in the rare cases when it splits, does so in such a way that one or more well-integrated individuals are formed. However, it might be argued, do not even these rare exceptions undermine a principle that is supposed to be *absolute*? If the *conceptus* could split, or could be made to split, does this not show that it is not yet a genuine individual, even in those cases where it goes on to become an individual?

3.2c.5 This argument relies on the principle that whatever is an individual *cannot* give rise to other individuals. This principle may once have seemed plausible; however, it is undermined by the very possibility of human cloning. In many living things, including some vertebrates, reproduction can occur asexually: by a parent-cell splitting to give two daughter-cells; or by a new organism budding off from a continuing parent. The suggestion that adult human beings might one day be cloned assumes that human beings *can* be

<sup>30</sup> Very occasionally, the process of separation of the twins is incomplete, leading to conjoined twins. However even in this case one can generally recognise two individuals (hence the term 'conjoined twins'). The process which gives rise to conjoined twins seems to be a distinct process with a different cause from that which gives rise to the formation of a disorganised teratoma.

reproduced asexually - without this compromising the individuality of the human being who generated the clone.

3.2c.6 There is ample evidence for strong integration in the early embryo, both in the case of singletons and in the case of identical twins. From the perspective of biology it is clear that there is one individual which endures from the single cell stage until the death of the multicellular organism - except in the case of identical twins, who are natural clones produced early in development by asexual reproduction. Furthermore, as soon as these twins come to be, they *also* endure as individual organisms until their own deaths. The normal habit of biologists is to *count* embryos: to test them, select them and transfer them. In all these actions it is assumed to be unproblematic that even early embryos are a discrete number of individual living organisms such that they can readily be counted.

### 3.3 **Do all human beings have full moral status?**

#### 3.3a *Human rights*

3.3a.1 Human subjects are to be respected by others and protected by society. Though every concrete human society seeks to limit those who can be accounted full members or citizens, there is a certain minimum protection that is generally thought due to *every* human being, whether a full citizen or not. The classification of some categories of people - especially foreigners, criminals, slaves, the mentally ill, women, children, and the disabled - as less than human was explicit in many ancient and even in some modern societies. It was in reaction to the horrors of Nazism that the United Nations sought to frame a list of basic 'human rights' possessed by all people irrespective of their situation, simply on the basis that they

are human beings. 'Human rights' language assumes the existence, or at least the possibility, of a universal community to which all human beings belong. Human rights are those things which are owed to a human being simply in virtue of being human.

3.3a.2 The moral insight basic to the very idea of human rights is that the human moral community naturally extends to all human beings, so that the exclusion of some category of human beings as subhuman is arbitrary and unjust. Human beings are revealed to be moral subjects by their thoughts and their mature free decisions, but those who are too immature or incapacitated to exercise these capacities are not to be discriminated against on the basis of what they cannot do. Human dignity resides in what human beings *are* rather than what they can or cannot *do* at any particular moment. All forms of society favour the full-grown and the strong and the bright, but these favoured few should not consider themselves more worthy of protection than the weakest or least able.

3.3a.3 Consider the protection due to a newborn infant. Not only the parents, but the great majority of people, recognize the child as more worthy of protection than the adult because more vulnerable. Physical abuse of small children rightly provokes a sense of horror or outrage, and few things are more shocking than the death of a child. The old and the sick are less immediately attractive than little children, but again, the sight of an old person who has been violently assaulted is viewed as monstrous precisely because the victim was so vulnerable.

3.3a.4 The newborn infant, the mentally disabled adolescent and the Alzheimer's patient are no less human, and no less worthy of the protection of

society, than the healthy worker or the brilliant student. They are all, equally, members of human society, which is, or ought to be, for the benefit of all. The human being who is mentally impaired or who has lost the use of his or her faculties is in a deprived state, but is not thereby subhuman. The newborn infant cannot speak or understand any more than a dog or cat, but he or she is already human, and it is this humanity that is the basis for his or her developmental potential. The baby is human, someone's son or daughter, with a human future in store. The significance simply of being human is immediately recognized by men and women of good will and is the basis of efforts in civilized societies to protect children and to secure better treatment for the mentally impaired. Human infants *have* an interest in health, in a stable family and in a future, even before they can *take* an interest in these things.

### 3.3b Human embryos

3.3b.1 Many people who would strongly oppose discrimination on the basis of age or mental capacity, and who would defend the rights of children born with a disability, do not see the protection of five- or six-day-old human embryos in the same light. Whereas it is obvious to them that disabled children are human beings deserving protection, the same is not obvious in the case of human embryos. This may be for several reasons. Some do not consider human embryos to be human individuals. Others consider the allegedly high level of natural wastage of embryos points to their lack of worth. Finally there are many who simply cannot believe that the embryo is a human being because it appears to be just a ball of cells.

3.3b.2 Essential to the proper understanding of the human embryo is

that it is not just human life, but a human individual; that is to say, an integrated human organism. This has been argued at length in the previous section and, when contentious moral questions are not foremost in people's minds, there seems to be no problem in regarding human embryos as discrete biological individuals. The fact that one embryo occasionally produces two does not undermine the empirical observation that it was genuinely *one* before and genuinely gives rise to *two* after.

3.3b.3 The number of ova which are successfully fertilized but without the embryo implanting is subject to much dispute with many conflicting estimates. It seems that there are abnormal fertilisations giving rise to products which are so disordered as to lack all human developmental potential and which should not be regarded as embryos or as human individuals but as pseudo-embryos. On the other hand, it would be fair to say that, even among those conceptuses showing serious chromosomal abnormalities, many of these would be children suffering from severe disability, rather than pseudo-embryos.

3.3b.4 Even if the normal level of wastage before implantation were 'only' 10-15% this would still amount to tens of thousands of embryos each year in Britain alone. Is this a cogent argument against attributing human status to the early embryo? High mortality may sometimes have the social effect of cheapening human life, but this is not a moral argument for taking this attitude oneself. In human beings, as in most animals, it is the young who are most vulnerable, and throughout history high rates of infant mortality have been the norm. This is still the case in many parts of the world. High rates of infant mortality

probably contributed to the culture of the ancient world in which infanticide was regularly practised, but it did not justify the practice. Nature is sometimes cruel, but 'the survival of the fittest' is no guide to justice in society, and the prevalence of high mortality is no guide to the moral status of the human embryo.

3.3b.5 It seems likely that neither the phenomenon of identical twins nor the rate of spontaneous embryo loss would have been given much weight if the individual in question had only *looked* more like a child. Newborn babies cannot exercise the human powers of speech and reason, but the potential they have is clearly rooted in their existing humanity. The mentally impaired, the sick and the old may be disabled and even disfigured, but they have human faces and human flesh and blood. The early embryo looks very different and does not easily evoke the concern or compassion evoked by a child or a comatose adult. Society recognises the human status of those with unrealized or frustrated human potential, but in every case this is based on an acknowledgment of the *visible* humanity of the person. It is precisely this which is in question in the case of the early embryo.

3.3b.6 Appearance is important, and immediate human sympathy or compassion is an important weapon in overcoming cultural prejudice against certain categories of human being. However, it is the task of moral reasoning to criticize our immediate emotional reactions and expand our moral horizons. The early embryo, whether produced by fertilisation, by natural cloning (identical twinning) or by artificial cloning (cell nuclear replacement), is a biological individual, a developing human being in the earliest stage of life who, if

allowed to develop, could enjoy a human future. Killing a human embryo is unjust for the same reason that killing an unwanted newborn child is unjust: because an innocent human being is deliberately destroyed and robbed of a future.

3.3b.7 Throughout history some human beings who were undeniably human, but who were different from others because of sex, race, age or disability, have been accorded a graded 'respect' without 'equality'. In each case the rhetoric of difference was invoked in defence of injustice. The basis of this injustice was the very existence of the category of a *human being who is not a member of human society*, a subhuman or *untermensch*, a category which was firmly rejected by the UN declaration of human rights. Human embryos are human individuals who, given time and opportunity, will grow into older human beings. They are no less human than any other human being but only younger and less aware, more vulnerable and less able to arouse our compassion.

#### 4. **Respecting the embryo**

##### 4.1 **Rights of the embryo**

4.1.1 We have seen that there are solid grounds for acknowledging the embryo as a human moral subject: an individual who has human interests and, therefore, basic human rights. What, then, are the basic rights of human beings as they apply to the embryo? We should distinguish, first of all, between the *positive* rights and the *negative* rights of human beings.

4.1.2 Human beings have *positive* rights, that is, rights that other people make certain choices which concern them: to provide them with medical treatment, for example, or some other portion of the communal resources. While these rights are very important,

it is clear that they do not apply in all situations where help might be needed. It is easy to imagine situations where there are more patients than a doctor can treat, and no patient has more right to treatment than any other. It would therefore be wrong to say that each patient has an absolute right to be treated; the doctor must simply distribute resources as best he or she can.

4.1.3 In contrast, the rights that human beings have *absolutely* are certain *negative* rights: rights that other people *not* deliberately harm them. For example, people have the right not to be intentionally killed (at least if they are innocent of violence or serious injustice). In the same way, people have the right not to have their bodies harmfully invaded; for example, not to have their organs harvested while they are alive.

4.1.4 As the embryo is a human moral subject, it too has the negative rights of an innocent human being. It has the right not to be deliberately killed, and not to have its body deliberately invaded in ways which do it lethal harm. The process of harvesting its cells, in the course of which the embryo dies, is no more permissible than extracting organs from a newborn child who dies as a result.

4.1.5 The embryo also has certain positive rights to shelter and nourishment from its mother. A pregnant mother has an extra reason to take care of her own health, for the sake of her unborn baby. She should also take reasonable steps to provide for the child's growth and development, by eating appropriately, for example.

4.1.6 Given that a mother has certain

responsibilities to her child, it is clearly wrong for a mother (or father) to permit embryos to be conceived in vitro who will not have a chance of being born. Parents who have had children by IVF normally consider the embryo to be a child or potential child.<sup>31</sup> It is clearly irresponsible to accept the status of parenthood in this way and at the same time neglect the 'spare' embryos who have been conceived.

## 4.2 Research on 'spare' IVF embryos

4.2.1 In a typical course of IVF treatment, some embryos will be conceived who will be surplus to a couple's requirements. In the case of these embryos, who would otherwise be discarded, it may be thought that they are 'going to die anyway', and should therefore serve some purpose, rather than be wasted altogether. We should note that this approach would not be accepted in the case of other human beings who are threatened with imminent destruction. In the case of prisoners on death row, or patients who are dying but not yet dead, we can see how disrespectful - and how dangerous - it would be to use them as live organ 'donors'.

4.2.2 In any case, we need to ask why IVF embryos are created in such lavish numbers. Leaving aside other questionable aspects of the IVF process, it is surely unethical practice deliberately to produce greater numbers of embryos than will be transferred to the mother.

4.2.3 Potential parents seeking fertility treatment are in a vulnerable position and it is difficult for them to

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<sup>31</sup> McWhinnie, A. (1996) 'Outcome for Families Created by Assisted Conception Programmes' *Journal of Assisted Reproduction and Genetics* 13 (4), p. 363.

object to the use of their embryonic offspring for research into infertility. The dangers inherent in using patients for medical research into their own condition are well documented. The Helsinki declaration on research on human subjects, as emended at Edinburgh in 2000, states that '[s]pecial attention is required for those for whom the research is combined with care' (para. 8). The 1989 Hong Kong version was even clearer: 'The subjects should be volunteers - either healthy persons or patients for whom the experimental design is not related to the patient's illness.' [III.2 Helsinki 1964 as revised 1975, 1983 and 1989] Even if destructive embryo research were acceptable in principle, analogous considerations would mitigate against using any embryos supplied by patients undergoing a course of fertility treatment. The situation of need or dependence tends to undermine freedom of consent.

#### 4.3 IVF for research

4.3.1 One step beyond experimentation on surplus IVF embryos is the deliberate creation of IVF embryos for experimental use. Here there is no pretence that any embryo produced will be given a chance of survival. It is not a case of bringing some good out of the supposed accident of too many IVF embryos; it is creation for destruction.

4.3.2 Conceiving IVF embryos for research compounds the disrespect shown towards them. The industrial or commercial exploitation of embryos is a further violation of their rights. It involves treating embryos as livestock to be farmed, managed, traded and slaughtered. The degradation of the IVF embryo conceived for research lies not simply in its early destruction but in the whole context within which the embryo lives out its brief existence.

4.3.3 With the recent expansion of the legal grounds on which embryo research may be performed, IVF for research seems likely to become much more common in the future. As research expands it is inevitable that there will be calls to extend the period of embryonic development within which it is permitted, particularly if cells from early embryos prove difficult to manage. If research is permitted on human embryos, how long before it is seriously suggested that research should be extended to human foetuses?

#### 4.4 Cloning for research

4.4.1 Cloning for the purpose of research is an area of special concern. As with IVF for the purpose of research, it is intended not to allow the embryo to live longer than the experiment dictates. Already in the case of IVF - even IVF to treat infertile couples - the embryo risks being treated as a product or commodity, since the procedure itself involves a process of manufacture. In the case of cloning, the method of production would be further dehumanized. The clone embryo would have no genetic parents, and would be created like a product to precise specifications. Having no parents in the normal sense, the clone would have no natural human protectors, and would be still more vulnerable than the IVF embryo today.

4.4.2 Cloning for research is the same procedure as cloning for birth, and already involves the decision to produce a human clone, although the clone will then be destroyed. The technical expertise developed in cloning for research will certainly assist those who want to clone for birth. Thus, if cloning for birth is regarded as objectionable (see below [4.6]), cloning for research must also be so regarded.

#### 4.5 Conscience and complicity

4.5.1 If the expansion of destructive research on IVF embryos and the initiation of cloning for research is allowed to go ahead, this will generate further moral problems concerning the issue of complicity in these activities. It is morally wrong not only to destroy human beings, but also to commission or authorize their destruction. Cloning and stem cell research create serious problems of conscience for doctors, patients, researchers and those asked to donate material to produce embryos for research. For example, a patient who supplies a cell for the purpose of creating a clone would be intending the destruction of the clone for the sake of harvesting its cells.

4.5.2 Complicity problems are not limited to cases where one *intends* the wrongdoing of others. Even those who do not intend an act of injustice can act wrongly themselves by giving the impression they condone it, if what they do is closely linked to such an act. Thus a patient might be acting wrongly if he or she accepted a stem cell treatment - even one which did not itself destroy embryos - if that treatment had been developed by means of the destruction of embryos.

4.5.3 If the *only* treatment developed for a serious medical condition is one that involves, or has involved, the creation and destruction of embryos, this will condemn conscientious physicians and patients to endure a cruel trial. Unless they act against their conscience - and do what they consider inhuman and barbaric - patients will suffer without hope of treatment and doctors will be unable to offer any alternative. This situation would be intolerable.

4.5.4 Consider alternative avenues of research where one might lead to successful treatment which would be

universally welcomed, while the other, even if it led to successful treatment, would create problems of conscience for thousands of patients and physicians. If the research possibilities are as yet uncertain, then it is particularly unfair to pursue research that, if successful, will be unconscionable to a significant proportion of the population. This is especially so in an age of integrated national healthcare provision. It is invidious to alienate so many people from the healthcare system.

4.5.5 Foetal tissue can be obtained from foetuses who have miscarried spontaneously, with the permission of the parents. In the case of taking tissue from aborted foetuses, it is often claimed that the act of abortion can be separated from subsequent research on tissue from the foetus, in such a way as to make this research morally acceptable. This claim is somewhat disingenuous: the mere presence of an intermediary between the abortionist and the researcher does not mean there is not a close link between their activities.<sup>32</sup> In any event, with regard to stem cell research on early embryos, it is not possible to dissociate the embryo destruction from the research, since the embryo would be destroyed by the very scientist who does the experiment.

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<sup>32</sup> Even if the abortion in question were supposed to be of 'such moral complexity' as not to be 'inevitably so heinous' (Polkinghorne, J. *et al.* (1989) *Review of the Guidance on the Research Use of Fetuses and Fetal Material* London: HMSO, para. 2.7) it cannot be appropriate that the agents of a child's death should give consent to the use of his or her body. Involvement in killing, even without subjective culpability, disqualifies one from acting as an executor, cf. Keown, J. (1993) 'The Polkinghorne Report on Fetal Research: Nice Recommendations, Shame About the Reasoning' *Journal of Medical Ethics* 19 (2) 114-120.

4.5.6 Abortion may be linked to stem cell research, not only as a way of obtaining cells directly, but also as a means of supplying ova for the creation of clone or IVF embryos. Adult women are currently reluctant to allow their ova to be used to create embryos for research. It has been suggested that ova from a young aborted female could be appropriated - thus treating her body and fertility as a mere means to an end. Not only would the embryo created from the foetal ovum be treated as if it were an object, but the embryo would be the offspring of a foetus who was herself treated in this way.

#### 4.6 Cloning for birth

4.6.1 Though cloning for birth does not involve the intention to destroy all the offspring created (and, in this respect, is better than cloning for research), it would nonetheless be seriously wrong for a host of other reasons.

4.6.2 The first objection to cloning for birth is the physical harm it would cause in cloned human beings. The experience of attempting to clone other mammals shows that the great majority of human clones would have genetically related disabilities. Some nuclear replacement would not result in a true human embryo, but in an entity with no developmental potential. If embryos were created, most would have severe abnormalities, some of which would only become apparent late in pregnancy. Screening for genetic abnormality would 'eliminate' a proportion of such abnormalities, but only at the cost of eliminating the unborn child itself. Of the babies born alive, many would suffer from disabilities inflicted on them irresponsibly because of the means used to produce them.

4.6.3 Nor is it only the child who would be abused in such experimental reproduction. Those women who chose to gestate a cloned child would risk the trauma of a very high rate of miscarriage, the trauma of being offered abortion when severe abnormalities were detected *in utero*, and the health risks of a difficult and atypical pregnancy. Whatever the motives of women who chose to take part, it would be irresponsible of the scientists to impose such risks on any human subject.

4.6.4 Even if cloning for birth was carried out in a large enough number of cases for the risks to be substantially reduced, this could only happen at the cost of many dead foetuses, many disabled infants and many pregnant women who had suffered excessively en route to making cloning safe.

4.6.5 Added to these serious but extrinsic reasons for objecting to cloning for birth is the intrinsic objection that it is demeaning to the cloned child. The reaction of unease or revulsion which is generated by the idea of creating multiple genetically identical copies of an existing person is not something which should be dismissed as irrational.<sup>33</sup> Our natural reactions can sometimes be a guide to important human values. In the case of human procreation there seems to be a

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<sup>33</sup> Cf. Elshtain, J.B. 'To Clone or Not To Clone?' and Tracy, D. 'Human Cloning and the Public Realm: A Defense of Intuitions of the Good' in Nussbaum, M.C., Sunstein, C.R. (1998) *Clones and Clones: Facts and Fantasies about Human Cloning* New York: W.W. Norton & Co.; Kass, L. 'The Wisdom of Repugnance' in Pence G.E. (1998) *Flesh of My Flesh: The Ethics of Cloning Humans* Lanham, MD: Rowman & Littlefield; Midgley, M. (2000) 'Biotechnology and Monstrosity: Why We Should Pay Attention to the "Yuk Factor"' *Hastings Center Report* 30 (5) 715.

symbolic as well as a practical value to the novelty generated by sexual reproduction. Family resemblance leaves symbolic room for novelty and individuality.

4.6.6 Human beings are not, of course, reducible to their genes,<sup>34</sup> and a cloned child would be as distinct from his or her genetic original as identical twins are distinct from one another. Nevertheless, deliberately producing people to resemble an existing person would make them *seem* like replacements, and this would undermine their quest for individuality and make them appear, to themselves and to society, as (replaceable) 'copies' rather than as (irreplaceable) originals. Identical twins are not deliberately produced to resemble each other, nor is there an age-gap between them. In contrast, a cloned child would always be a copy,<sup>35</sup> deliberately produced so as to fulfill the potential already demonstrated by another.

4.6.7 The cloned child would be produced without genetic parents, as a copy of some existing person, perhaps someone who had recently died (a replacement child), or perhaps someone still alive (a 'designer baby'). Even if the clone survived to live a healthy life, he or she would live in the shadow of the person cloned, under pressure to be like the person he or she was made to resemble. This compromises the interest of children in establishing a separate identity for themselves; it subjects the child's

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<sup>34</sup> Cf. Gould, S.J. 'Dolly's Fashion and Louis's Passion' in Pence (1998); Lewontin, R.C. (1993) *The Doctrine of DNA: Biology as Ideology* London: Penguin Books; Appleyard, B. (1999) *Brave New Worlds* London: HarperCollins, esp. ch. 5.

<sup>35</sup> Cf. Holm, S. (1998) 'Life in the Shadow: One Reason Why We Should Not Clone Humans' *Cambridge Quarterly of Healthcare Ethics* 7 (2) 160-162.

freedom unreasonably to the parents' desires. Irrespective of the psychological harm to the child which might or might not follow, cloning is intrinsically a form of excessive parental control, since the child is created as a copy of someone chosen by the parents.<sup>36</sup>

## 5. Public policy

### 5.1 General principles

5.1.1 The implications of the embryo's status as a human moral subject do not stop with the duties of those individuals who are personally involved in the creation of an embryo. There is a wider question of how society should respond to issues surrounding research on human embryos. It is instructive to consider how society responds to the moral rights of children and the mentally impaired. The most basic of these rights, such as the right to life (that is, the right not to be deliberately attacked or lethally neglected) are seen as enforceable by law, while other rights are, at least, promoted as a matter of public policy.

5.1.2 Moral principles regulating medical or other research on human subjects were laid down at Helsinki in 1964 and subsequently revised at Tokyo (1975), Venice (1983), Hong Kong (1989), Somerset West, SA (1996) and Edinburgh (2000). Three paragraphs are pertinent to the use of human embryos for research: 3, 5 and 8.

5.1.3 *The Declaration of Geneva of the World Medical Association binds the physician with the words, "The health of my patient will be my first consideration," and the International Code of Medical Ethics declares that, "A physician shall act only in the*

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<sup>36</sup> Kitcher, P. 'Whose Self Is It Anyway?' in Pence (1998).

*patient's interest when providing medical care which might have the effect of weakening the physical and mental condition of the patient."* (para. 3)

5.1.4 *In medical research on human subjects, considerations related to the well-being of the human subject should take precedence over the interests of science and society.* (para.5)

5.1.5 *Medical research is subject to ethical standards that promote respect for all human beings and protect their health and rights. Some research populations are vulnerable and need special protection. The particular needs of the economically and medically disadvantaged must be recognized. Special attention is also required for those who cannot give or refuse consent for themselves, for those who may be subject to giving consent under duress, for those who will not benefit personally from the research and for those for whom the research is combined with care.* (para. 8)

5.1.6 Several points may be noticed. First, in the 1964 declaration (and until 1989) these paragraphs, or their analogues, occurred in a section entitled 'Non-Therapeutic Biomedical Research Involving Human Subjects'. As mentioned above (1.3.3) research for medical reasons but not for the benefit of the subject of the experiment is properly described as non-therapeutic. Research on a human subject without the subject's consent, where the research would cause serious harm to the subject, where the benefits to science and society take precedence over the life and well being of the subject, are forbidden on every count. If research on human embryos is correctly described as 'research on human subjects', then it stands in square contradiction to the principles

laid down with so much care at Helsinki and elsewhere.

5.1.7 The right of vulnerable individuals not to be attacked always outweighs the long-term benefit to others of medical research. However, what are we to do in cases of doubt, where it is not clear whether the research is harmful, or where it is not even clear that there is a human being who will be harmed? Take the case in which it is not clear whether a patient is dead and where a research team wishes to use his organs. If the patient is dead then removing his organs will not harm him as there is no human individual present. However, if the patient is alive then removing his organs will kill him. In such cases the death of the patient must be established *beyond reasonable doubt* before it is legitimate to act.

5.1.8 In the case of human embryos, there is no social consensus as to their human or moral status. Many people, not all of whom have interests in the research community, do not believe that the early embryo is a human individual with an interest in being born, and in not being harmed. The matter is fiercely debated in respectable academic journals of philosophy, theology and social policy. The argument presented in this paper is a contribution to that debate, giving public reasons why the human embryo should be acknowledged as a human moral subject. However, even if there are other reasonable people who disagree on this matter, this does not nullify the existence of a large body of respectable and well-reasoned opinion holding that the human individual begins at the single cell stage. This body of academic opinion<sup>37</sup> constitutes

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<sup>37</sup> Eg. Ashley, B., Moraczewski, A. (1994) 'Is the Biological Subject of Human Rights Present from Conception?' in Cataldo, P.,

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Moraczewski, A. *The Fetal Tissue Issue: Medical and Ethical Aspects* Braintree Mass.: Pope John Centre; Banner, M. (1998) 'Christian Anthropology at the Beginning and End of Life' *Scottish Journal of Theology* 51: 21-60; Barry, R. 'The Personhood and Individuality of Unborn Human Life' in Barry (1989) *Medical Ethics* New York: Peter Lang; Bracken, C.P. (2001) 'Is the Early Embryo a Person?' *Linacre Quarterly* 68 (1) 49-70; Cameron, N. (1990) 'When Does Life Begin?' in *Is Life Really Sacred?* Eastbourne: Kingsway Publications; Crosby, J. (1993) 'The Personhood of the Human Embryo' *Journal of Medicine and Philosophy* 18 (4), 399-417; Doerflinger, R. (1999) 'The Ethics of Funding Embryonic Stem Cell Research' *Kennedy Institute of Ethics Journal* 9 (2) 137-150; Fisher, A. (1991) 'Individuogenesis and a Recent Book by Fr Norman Ford' *Anthropotes* 7; Foster, J. (1985) 'Personhood and the Ethics of Abortion' in Channer, J. ed. *Abortion and the Sanctity of Human Life* Exeter: Paternoster Press; Gallagher, J. (1985) *Is the Human Embryo a Person? A Philosophical Investigation* Toronto: Human Life Research; Grisez, G. (1989) 'When Do People Begin?' *Proceedings of the American Catholic Philosophical Association* 63, 22-47; Heaney, S. (1992) 'Aquinas and the Presence of the Human Rational Soul in the Early Embryo' *The Thomist* 56, 1; Howsepian, A.A. (1992) 'Who or What Are We?' *Review of Metaphysics* 45: 483-502; Howsepian, A.A. (1997) 'Lockwood on Human Identity and the Primitive Streak' *Journal of Medical Ethics* 23:38-41; Iglesias, T. (1987) 'What Kind of Being Is a Human Embryo?' in Cameron ed. *Embryos and Ethics* Edinburgh: Rutherford House; Irving, D. (1993) 'Scientific Philosophical Expertise: An Evaluation of the Arguments on "Personhood"' *Linacre Quarterly* 60 (1) 18-45; Jacquette, D. (2001) 'Two Kinds of Potentiality' *Journal of Applied Philosophy* 18 (1); Johnston, M. (1995) 'Delayed Hominization' *Theological Studies* 56; Lee, P. (1996) 'When Do Individual Human Beings Come To Be?' in *Abortion and Unborn Human Life* Washington: CUAP; McCarthy, B. (1997) 'The Status of the Embryo: A Theological Approach' in *Fertility and Faith* Leicester: Intervarsity Press; Meyer, J. (2000) 'Human Embryonic Stem Cells and Respect for Life' *Journal of Medical Ethics* 26 (3) 166-170; Oderberg, D.S. 'Abortion' in Oderberg (2000) *Applied Ethics: A Non-Consequentialist Approach* Oxford: Blackwell; O'Donovan, O.M.T. (1984) 'And Who Is a Person?' in *Begotten or made*; O'Donovan,

at the very least, a *reasonable doubt* within the community as a whole concerning the status of the embryo. If the case is unproven then the only ethical course is not to risk killing the innocent, even for the sake of benefit to others.

5.1.9 There is no reason why society should tolerate destructive research on human embryos, any more than similar research on older children. It is important not to set a precedent of lethal research on human subjects,

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O.M.T. (1985) 'Again: Who Is a Person?' in Channer, J. ed. *Abortion and the Sanctity of Human Life* Exeter: Paternoster Press; Palazzani, L. (1996) 'The Nature of the Human Embryo: Philosophical Perspectives' *Ethics and Medicine* 12 (1), 14-18; Schwarz, S. (1990) 'When Does Human Life Begin?' in *The Moral Question of Abortion* Chicago: Loyola University Press; Sutton, A. (1990) 'Arguments for Abortion of Abnormal Fetuses and the Moral Status of the Developing Human Embryo' in Sutton (1990) *Prenatal Diagnosis: Confronting the Ethical Issues* London: Linacre Centre; Teichman, J. (1985) 'The Definition of Person' *Philosophy* 60: 175-185; Tollefsen, C. (2001) 'Embryos, Individuals and Persons' *Journal of Applied Philosophy* 18 (1); Tonti-Filippini, N. (1992) 'Further Comments on the Beginning of Life' *Linacre Quarterly* 59; Wade, F (1975) 'Potentiality in the Abortion Discussion' *Review of Metaphysics* 29; Watt, H. (1996) 'Potential and the Early Human' *Journal of Medical Ethics* 22; Watt, H. 'Embryo Destruction' in Watt (2000) *Life and Death in Healthcare Ethics* London: Routledge; Wyatt, J. (1998) 'When is a Person?' in *Matters of Life and Death* Leicester: Intervarsity Press; Werpehowski, W. (1997) 'Persons, Practices and the Conception Argument' *Journal of Medicine and Philosophy* 22 (5) 479-494; Young, K. (1994) 'The Zygote, the Embryo and Personhood' *Ethics and Medicine* 10 (1) 27; Cf. also Braine, D. (1994) 'The Human and the Inhuman in Medicine' in Gormally, L. ed. *Moral Truth and Moral Tradition* Dublin: Four Courts Press; Reichlin, M. (1997) 'The Argument from Potential: A Reappraisal' *Bioethics* 11 (1), 123; Suarez, A. (1990) 'Hydatiform Moles and Teratomas Confirm the Human Identity of the Pre-implantation Embryo' *Journal of Medicine and Philosophy* 15:627-635.

however worthy the motive. Even if society as a whole is not sure if the embryo is a human individual, as a society we should at least admit that this is a strong possibility, and so exclude research on what may well be human beings.

## 5.2 Benefits and alternatives

5.2.1 If there is a serious moral doubt, which continues to exist within the national and international community, then morally questionable research should not be permitted. However, Parliament and popular opinion has clearly been influenced by the argument that this research is *morally necessary* because it offers the only hope of finding a cure to serious diseases such as Parkinson's, Alzheimer's and multiple sclerosis. Yet the haste with which this decision was made gave little time to weigh the scientific evidence in what has been an unusually fast moving field. Far from supporting the necessity of embryonic stem cell research, the evidence from current research suggests that there are great difficulties with embryonic stem cell therapy, comparable in magnitude, if not greater, than those associated with adult stem cell therapy.

5.2.2 It is not the case that embryonic stem cell research offers a real chance in the near future of revolutionary therapy for the diseases mentioned. Nor is it the case that there are no alternative and promising avenues of research. The pluripotency of early embryonic cells, which is the reason they are thought attractive, is at the same time the greatest obstacle to their use. The flexibility of these cells makes them unpredictable in the kinds of cells they produce, in a way which could endanger the patient if they were ever used in transplants.

5.2.3 Clinical promise in this area is currently being shown by adult stem

cell research. Use of adult stem cells poses no ethical problem in principle and, if the patient's own cells are used, avoids the problem of rejection. Such treatment, which is already underway, is morally acceptable to the vast majority of patients. To the extent that it is thought necessary, embryonic stem cell research can be carried on in morally acceptable ways, on cells taken from animal embryos or, with the permission of the parents, from fetuses who have spontaneously miscarried.<sup>38</sup>

5.2.4 Researchers have a vested interest in stressing the prospects of their own research, but in the case of embryonic stem cell research there is reason to doubt these prospects and the necessity of adopting this particular approach. All things being equal, no scientist wishes to be restricted in which methods may be employed, but social responsibility sometimes makes legal limits right and important. We would suggest that the public has been much misled as to the prospects of embryonic stem cell research in relation to the (scarcely mentioned) prospects of adult stem cell research.

5.2.5 As there are ethical alternatives which offer similar or better immediate and/or long term prospects, the government should give serious reconsideration to the moral doubts which have been expressed and the public unease surrounding the use of embryos for research, and especially the licensing of human cloning for research purposes. Stem cell research on clone and other embryos has been made legal without necessity at the very time when adult stem cell research is making most progress.<sup>39</sup>

<sup>38</sup> Cf. 4.5.5, note 32.

<sup>39</sup> Scolding, N. (2001) 'New cells from old', *Lancet* 357, 329-330, Feb 3.

### 5.3 Unacceptable consequences

5.3.1 The statutory instrument which permitted cloning for research purposes was greeted with dismay by the rest of Europe. The prohibition of cloning recommended by the European Parliament covers cloning for research as well as cloning for birth. Indeed, if cloning for research is permitted it seems difficult to imagine how cloning for birth could be resisted.

5.3.2 It was only one week after the passing of the statutory instrument by the House of Lords that Severino Antinori hosted a conference in Rome to announce his intention to bring a clone baby to term. As so often, it seems that the technical challenge represented by an unprecedented step (in this case, cloning a human being) is incentive enough to impel any scientific project. The legitimacy of this form of research is a matter of global and not merely national concern, for research forbidden in one country will move to another. It is imperative that the Select Committee inform itself on the grave misgivings expressed in other scientifically developed nations in Europe, America and Australasia, so as to reach a common mind on what are matters of global ethical importance.

5.3.3 Not only would the acceptance of cloning for research make cloning for birth inevitable, in the judgment of many, but it would also make inevitable a further extension of research on human embryos beyond 14 days. There are places where logically and politically a line can be drawn, and cloning is one of few such lines. A ban on cloning is supported by a great mass of people internationally and could provide a bulwark against further erosion of ethical standards within medical research. If society is not able to resist the attraction of this research,

when the benefits are uncertain and international opinion is against it, it is hard to imagine what, in the future, it would be able to resist.

5.3.4 If stem-cell research on human embryos and cloning for research go ahead, this will seriously compromise many physicians and patients if and when treatments based on this research become available. In contrast, if research funds are diverted to develop treatments that all can accept, patients and doctors will not be placed in this invidious situation.

### 5.4 Recommendation

5.4.1 It is not too late to reconsider this matter. Although the findings of the Select Committee have no weight in law, and the statutory instrument has already been passed, if the Committee were to argue strongly against permitting cloning for research, in particular, it would be difficult for the government to ignore its findings. The legislation might yet prove a dead letter, with the HFEA unwilling to give licenses, or further legislation might be introduced to prevent all human cloning. A moratorium on using clone or IVF embryos in stem cell research would help adult stem cell research attract more of the available research funds so as further to prove its case as scientifically as well as ethically superior. Research on clone or other embryos contravenes basic principles of justice and seriously threatens international ethical standards in research. This is an opportunity to prevent a step being taken that need not and should not be taken. It is a question of having the prudence to know when a line must be drawn, and the courage to draw it.

## 6. Responses to questions

6.0.1 The Select Committee has set out certain questions to which we here

respond. However, we are not thereby endorsing these as the most pertinent questions which could be asked, and our answers cannot be taken as a summary of this Submission (a summary is provided before the Introduction, S.1 7).

6.1 *Do the additional purposes in the 2001 Regulations raise issues of principle different from the purposes specified in the 1990 Act?*

6.1.1 Yes, destroying human embryos in stem-cell research leads to new questions of conscience (4.5.1-5; 5.3.4); furthermore, the interpretation of these regulations as allowing cloning for research raises the question of the ethical legitimacy of cloning (4.4.1-2; 4.6.1-6), and also the question of whether and how to promote alternative avenues of research (5.2.1-5). However, the most important issue of principle is one already compromised in the 1990 Act and which urgently needs to be reviewed; i.e. the legitimacy of producing and using human embryos for destructive research (4.1.1-4.3.3).

6.2 *There is a range of different views world-wide on the acceptability of research on embryonic stem cells. What considerations underlie these differences? Do changes in the law here have implications for practice overseas and vice versa?*

6.2.1 Those who accept embryonic stem-cell research either see no ethical objection to what seems to be a beneficial technical advance or else they have accepted the overriding necessity of this form of research.

6.2.2 Those who object do so for many different reasons. What they have in common is that they are unconvinced by claims of the

imminence of the prospective benefits and / or by claims of the necessity of research using these means (2.1.1-2.2.5). Many also hold that there are ethical objections in principle to this kind of research (4.1.1-5.1.9; 5.3.1-4).

6.3 *Have increased globalisation and other international commercial developments, in relation, for example, to e-commerce and patenting, changed the context of the debate in the UK? Would issues relating to research on embryos benefit from more attention at international level?*

6.3.1 Yes scientific research and development is now an international endeavour and effective regulation and maintenance of ethical standards requires international co-operation. If one country allows unethical research then it will quickly attract those wishing to avoid restrictions placed on research in their own countries. Such international research tourism is already apparent with some fertility treatments, and cloning would surely follow this pattern. As international co-operation is essential, it is important to pay close attention to the concerns of international partners when framing domestic legislation in this area (5.3.1-2).

6.4 *What are the potential medical benefits of stem cell research? What is the most likely time-scale for realising them? What are the potential risks?*

6.4.1 There are great potential benefits from stem-cell research for a range of diseases. Some patients are already benefiting from (adult) stem cell research; however, for other conditions it will take many years before we see results at the clinical level.

6.5 *There are differing views on the*

*extent to which potential treatments could be developed from non-embryonic stem cells, such as adult and umbilical cord stem cells. What are the advantages and disadvantages of working with these alternative sources of stem cells?*

6.5.1 Treatments using adult and umbilical cord stem cells are already being carried out for some conditions (2.1.1-2.2.5). It is clearly best if the patient's own cells can be used to avoid rejection problems. Cloning has been mooted as a way to avoid these problems; however, the high rate of genetic abnormality found in animal clones casts doubt over the safety of cloning for transplantation (2.4.1).

6.5.2 Another advantage of adult stem cell research is that human ova (already a scarce resource in fertility treatment) are not required to generate adult stem cells.

6.5.3 Adult stem cells are also more stable and less inclined to produce cancer or disorganized growths (2.2.1-4; 2.4.1).

6.6 *What are the commercial interests involved in research in this area? Does increased commercial involvement create additional ethical difficulties?*

6.6.1 Biotechnology companies have invested heavily in cloning and embryonic stem cell patents. Commercial interests endanger the clarity of the ethical discussion as commercial benefits may distort the fair presentation of the medical benefits.

6.7 *Human reproductive cloning (the transfer of an embryo created by cell nuclear replacement into a woman's uterus) is unlawful in the UK,*

*and the Government has announced its intention of reinforcing this ban by specific primary legislation. Is there likely to be any pressure to resist such a ban? What are the principal ethical (and scientific) arguments against human reproductive cloning?*

6.7.1 If it has proven politically difficult to block research on cloned embryos, even though this is unnecessary and unethical, it may also prove difficult to block requests that some clones be allowed to come to term to fulfill the desire of an infertile couple for a child.

6.7.2 Cloning for birth is objectionable: first, as it would involve the creation of hundreds of damaged embryos, most of whom would miscarry; second, as it would impose significant risks on the gestating mother; and third, as the clone would be produced asexually and according to a predetermined genetic plan. Cloning would deprive the child of natural parentage and genetic novelty and subject him or her unfairly to the desires of the commissioning parents (4.6.1-7).

6.7.3 All cloning, including 'therapeutic cloning', is reproductive in the sense that it generates a new embryonic individual (1.3.2-4). In any primary legislation, human reproductive cloning should be defined as 'cloning for the purpose of implantation'. It is the initial generation of the clone embryo which should be prohibited, not the implanting of a clone embryo who already exists.

6.8 *Does the extension of embryonic stem cell research, and, in particular, the technique of cell nuclear replacement therapy (therapeutic cloning) - designed to grow tissue for therapeutic purposes -*

*increase the likelihood of human reproductive cloning in the future?*

6.8.1 Yes it is clear to everyone that cloning for research facilitates cloning for birth both technically and politically (4.4.2).

6.8.2 It should, however, be made clear that generating clones who will then be destroyed in the course of 'harvesting' their cells is itself seriously wrong irrespective of the fact that it might lead to cloning for birth. Indeed, in its treatment of the clone embryo, 'therapeutic cloning' is a greater injustice than 'reproductive cloning' (3.3b.6-7).

6.9 *Has the regulatory framework established by the 1990 Act operated effectively? Is it likely to remain adequate for the foreseeable future? Have any gaps appeared in the regime as a result of developments since 1990?*

6.9.1 The 1990 Act presumed the legitimacy of creating embryos in the course of fertility treatment who would not be implanted, and even of creating embryos purely for the sake of destructive research. As these procedures are both unethical, the regulatory framework could never have 'operated effectively' in any ethical sense.

6.9.2 The intention of the statutory instrument seems to presuppose the existence of a significant gap, in that the 1990 Act forbade one technique of human cloning but did not envisage cloning by the 'Dolly' technique. It is remarkable that this gap should be thought a sufficient basis for the regulation of such an ethically contentious issue as the creation and use of cloned human embryos.

6.10 *Do additional guidelines need to be developed to assist the Human Fertilisation and Embryology Authority in issuing licences in accordance with the new Regulations? If so, what should the guidelines contain?*

6.10.1 If fundamental ethical principles have already been compromised in the framing of the Regulations themselves, it is difficult to see what could be the ethical basis of any further guidelines. Additional specification could perform only a cosmetic or a rhetorical function, not the function of specifying in greater detail valid ethical principles.

**© The Linacre Centre for Healthcare Ethics,**

**38 Circus Road,  
London NW8 9SE  
England**

**Tel. +44 (0)20 7266 7410  
Fax +44 (0)20 7266 5424  
admin@linacre.org**

**Registered Charity No. 274327**