

How is it Right to Treat the Human Embryo? The Embryo and Stem Cell Research

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Abstract: This submission to the Australian Health Ethics Committee considers issues of “respect” and “potential” and argues that the embryo is to be respected because it is nascent and developing human life. Destructive experimentation, even for the purposes of stem cell research, should therefore not be permitted on embryos originally intended for implantation but now surplus to IVF needs. The goals for which they are being destroyed in experimentation are distant and uncertain, and professional practice in IVF now requires that no more than one or at most two embryos should be generated.

A. REFINING THE QUESTION

1. THE FIRST TEST-TUBE BABY, Louise Brown, was born in Oldham, England, on 25 July 1978. On 26 July, 65 year old Albino Luciani, Patriarch of Venice, was elected Pope John Paul I on the third ballot. When asked by the media in his first interview for his reaction to the birth, John Paul’s response was immediate: “I bless the mother; I bless the baby.”

2. Nine years later, on 22 February 1987, the Sacred Congregation for the Doctrine of the Faith issued its Instruction, *Donum Vitae, The Gift of Life*.¹ It considered in-vitro fertilisation, artificial insemination, embryo experimentation and the other practices associated with the emerging artificial reproductive technologies. While sympathising, like Pope John Paul I, with the desire of infertile couples to have children of their own, the *Instruction* was comprehensive in its rejection of all forms of reproduction that “replace”, or “substitute for” (these are technical terms), natural procreation. The central argument was that, far from merely assisting procreation, most of these new technologies so intervene in the process of giving life that they destroy the unity and

1. Sacred Congregation for the Doctrine of the Faith, “*Donum Vitae*”, *Instruction on Respect for Human Life in its Origin and on the Dignity of Procreation* (Homebush: St Paul Publications, 1987).

continuity between the unitive and procreative aspects of marriage, between love-making and baby-making.² Even the so-called “simple case” of IVF, where sperm are retrieved after intercourse and all the embryos formed in the petri dish are transferred immediately to the maternal uterus, was rejected.³

3. The *Instruction* was equally explicit and comprehensive in rejecting all forms of embryo experimentation, even for the purpose of using embryos surplus to reproductive transfer to cure or alleviate a whole range of diseases. The *Instruction* maintained the traditional Catholic position of the inviolability of the human embryo, that it should be treated “as a person”⁴ from the time of fertilisation, and therefore should not be exposed to destructive experimentation.

4. Note, however, the phraseology. The *Instruction* says that the human embryo should be treated “as a person”. It did not say the human embryo “is a person”, although many commentators have assumed that this is the logical inference. To understand this distinction it is necessary to rehearse the recent history of Catholic Church teaching on this question.

5. On November 18, 1974, the same Sacred Congregation for the Doctrine of the Faith published its *Declaration on Abortion*.⁵ In the course of this *Declaration* the Congregation adverted to the discussion surrounding the questions: “When does individual human life begin?”, and “What makes a human subject a person?” The Congregation noted that within the Catholic tradition the discussion of these questions is generally framed in terms of a further question to which the former two questions are, as it were, corollaries. That question is: “When is the spiritual soul infused into the human subject?”⁶

6. The Catholic Church is often represented as teaching definitively that individual human life begins, personhood is constituted, and the human soul is infused when the process of fertilisation is taking place. This is indeed the view that the majority of Catholic moralists have supported, especially since the latter decades of the nineteenth century. It is also important to note, however, that this has not been the exclusive view that has been proposed within the Catholic tradition. Many eminent Catholic moralists, both in previous centuries and today, particularly those relying on Aristotelian categories, have subscribed to theories of “delayed” or “mediate” animation, that is, that the soul is infused into the human subject at points later than fertilisation, with the

2. *Donum Vitae*, 40-44.

3. *Donum Vitae*, 44-51.

4. *Donum Vitae*, 19.

5. Sacred Congregation for the Doctrine of the Faith, *Declaration on Procured Abortion* (18 November, 1974).

6. *Declaration on Procured Abortion*, nos 12, 13 and especially footnote 19.

corollary that individual human life and personhood do not begin until a later stage in the development of the human embryo.

7. Granted these differences within the tradition, it is not surprising that in the *Declaration on Abortion*⁷ and subsequently⁸ the Sacred Congregation has abstained from any attempt to define the precise time of animation and personhood. It noted merely that this is not strictly or exclusively a purely scientific question, but that it is also a philosophical and a moral one.⁹ It did not think it appropriate to attempt an answer at the present time to any of the three foregoing questions. It did, however, address itself to the further question of the duties owed to the embryo from the time of fertilisation. As would have been expected by those cognisant with the Catholic tradition, it affirmed that, whatever the status attributed to the developing embryo, its inviolability should be maintained from that time.

8. It is interesting that the same approach to these and similar questions was employed in the *Report* presented to the English Parliament by the members of the Warnock Committee in 1984. In drawing attention to these questions the Committee reported:

Although the questions of when life or personhood begin appear to be questions of fact susceptible to straightforward answers, we hold that answers to these questions in fact are complex amalgams of factual and moral judgments. Instead of trying to answer these questions directly we have therefore gone straight to the question: how is it right to treat the human embryo? We have considered what status ought to be accorded to the human embryo, and the answer we give must necessarily be in terms of ethical or moral principles.¹⁰

9. Unfortunately, as many commentators pointed out, the *Report* did not make explicit the ethical or moral principles by reference to which the competing moral views on the status of the human embryo were resolved. The *Report* sets out the competing moral views in an admirably clear fashion, and it does not hesitate ultimately to make quite unequivocal recommendations. But the principles and methods by which the Committee arrived at the resolution of these competing views are not explicated. As the foregoing citation would seem to indicate, I suspect that the complexity of the task was beyond the competence of a Committee drawn from such differing and, indeed, conflicting con-

7. *Declaration on Procured Abortion*.

8. See *Donum Vitae*, 20, 21; John Paul II, Encyclical Letter, "*Evangelium Vitae*", "*The Gospel of Life*" (Homebush: St Paul Publications, 1995) 60.

9. *Declaration on Abortion*, footnote 19.

10. *Report of the Committee of Inquiry into Human Fertilisation and Embryology*, (London: HMSO, 1984) 11.9 (*Warnock Report*).

stituencies. Thus they merely resorted to majority and minority recommendations rather than to consensus positions.¹¹

10. The Committee, however, did not leave all the moral questions unanswered. It did propose answers to the question: How is it right to treat the embryo? But it did not, at least explicitly, presume to address the question of the ontological status of the embryo, that is, what is it in itself, and, in particular, whether and on what grounds it should or should not be accorded the status of a person, especially in the early stages of its development. Fortified by these precedents, then, drawn from these two widely different sources, the Sacred Congregation and the Warnock Committee, I believe that our community in addressing the question of embryonic stem cell research should prescind at least initially from the questions "When does individual human life begin?", and "Is the embryo a person?", and "When is the spiritual soul infused into the human subject?", and address itself to the question: "How is it right to treat the embryo?"

11. It is not that the two former questions are not important and, in some sense, more basic than the latter. They often lead, however, to seemingly intractable discussions on definitions of personhood and the beginning of human life. These definitions are almost invariably structured in such a way as to lead with an unassailable logic to the ascription or denial of personhood to embryos (or foetuses and infants). To establish the persuasiveness of these definitions their proponents appeal to one or other *empirical* process or quality (for example, membership of the human species, fertilisation, genetic identity, biological individuation, implantation, development of the primitive streak, cerebral development, ability to experience pain, rudimentary consciousness, quickening, viability, birth, self-consciousness, ability to formulate desires and have interests), which they claim legitimates the *moral* claim that the embryo (or foetus or infant) is, or is not, a person, and has, or does not have, the rights that follow upon this status.

12. This manner of arguing from empirical or scientific fact to moral claim can be illuminating, and is commonly employed in moral and legal argumentation. It has the benefit of directing attention to the facts which are considered relevant to establishing the moral conclusion. Nor is it the nature of the entailment from evidence to conclusion that I question. But in the current debate on the status of the embryo/foetus/infant what this manner of arguing merely seems to do is to move the argument one step further back, that is, to the legitimacy of employing this, rather than that, set of empirical criteria as necessary, if not sufficient, conditions by definition for the attribution of personhood.

13. By this I do not wish to imply that all definitions are relative, and to this extent equally persuasive or unpersuasive. Merely, that, in a

11. *Warnock Report*, 11.22-30.

matter as complex and controverted as the present debate on the status of the embryo (to whose complexity both the Roman Congregation and the Warnock Committee each in their own way have adverted), it seems to me that the proposed definitions beg the question at issue by, at least tacitly and implicitly, including/excluding the relevant cohort (embryos, foetuses or infants) in/from the class from which the definitional characteristics of personhood are drawn. For example, if one wishes to maintain that *embryos qualify* for the attribution of personhood, one is likely to invoke as a definitional characteristic the quality of "membership of the human species" or "genetic identity". On the other hand, if the intention is to *exclude embryos* from the class of persons, then a quality like viability, birth or self-consciousness is likely to be invoked in the definition of personhood. My point, then, is that these definitions have been tailored to support the desired recommendation. But an examination of the legitimacy and persuasiveness of the definition will merely reactivate the original question.

14. What I suggest, therefore, is that in addressing its schedule the Australian Health Ethics Committee confine its attention, at least initially, to the question: "How is it right to treat the embryo?", unencumbered by considerations whether the embryo is or is not a person. This, I believe, obviates two complex philosophical and moral issues:

- (a) What are the qualities that legitimate the attribution of personhood?
- (b) Whether embryos (or foetuses or infants) can be the subject of rights?

15. The problems associated with the first question I have already indicated. The second is no less complex. For there are three further questions intimately associated with it, all bearing upon the term "right":

- (c) What is it *right* for an agent to do in respect of x (in this case, embryos)?
- (d) Has the agent *duties and obligations* in respect of x?
- (e) Has x a *right* in the relevant respect (for example, to life, not to be experimented upon) redeemable upon the relevant agents?

16. The relation between "right", "rights" and "duties" is complex (all the more so linguistically in English), but I would suggest that the three questions, though interrelated, are distinguishable, and that it is possible to treat one or two of them without being committed necessarily to treating the third. Might I further suggest that this is what the Australian Health Ethics Committee should do?

17. A brief example may help to illustrate the distinction between the first two questions, that is, (c) and (d). Consider a five year old child whose life prospects are extremely abbreviated unless he receives a bone marrow transplant from his perfectly healthy twin brother. It seems to me that it is at least arguable that, provided the transplant can be effected without endangering the life of the twin brother or causing him notable inconvenience, and there is a high probability that the operation will have a successful outcome, it is "right" for the twin to make this donation to his ailing brother. By "right" I do not mean merely "morally permissible". I mean it is the morally normative and appropriate thing to do, in view of the social and familial ties that bind the brothers together. It would, again arguably, be "wrong" morally not to make the donation. The twin brother "ought" (in a genuinely normative moral sense of the word) to donate.

18. One would hesitate to say, however, that the child has a duty or obligation to make the donation. I say this not because the reasons from a moral point of view are only arguable, but rather because a child of such tender years has not yet contracted into, or become a participant in, the characteristically adult system of rights, duties and obligations. He is not yet sufficiently mature to be the appropriate subject of duties and obligations – though he may be the recipient of rights. I do not believe it is drawing too fine a line between the respective notions to say that in such cases that, again at least arguably, the child "ought" to donate, but that he does not have a duty or obligation to donate. In this sense it is possible to treat question (c) in isolation from question (d).

19. I would further maintain that it is also possible to treat question (d) in isolation from question (e), that is, that agents can have duties and obligations towards other entities without these others necessarily having rights and claims against the agents. Thus, arguably again for the sake of the example, we can have duties not to inflict unnecessary pain on animals (or embryos), we can have duties not to wantonly ravage the environment, we can have duties not to exhaust energy sources that might be of benefit to future generations, we can have duties to take sufficient care of our own health and life. I am aware that in each of these instances it is possible to specify a corresponding right that is being infringed if we fail to observe these duties (for example, animal "rights", the rights of other possible viewers or users of the environment, the "rights" of future generations, the rights of our associates and dependents). In each case, therefore, it may be necessary to refine the proposed example further to eliminate the possibility of identifying rights corresponding to these duties (for example, lower animals, deserts or Antarctic wastes, agents with no associates or dependents).

But all I wish to indicate at this point, without embarking on an extended discussion of rights, is that there is at least a possibility

(probability?) that an agent may have a duty or obligation to act in a certain way in respect of a certain entity or object without there being necessarily a corresponding *right* of that object or entity which he is respecting.

20. The implications of these two briefly sketched sets of examples is that it is possible to address the question: "How is it right to treat the embryo?", and, "What duties and obligations do we have in respect of embryos?" without necessarily becoming involved in the discussion whether or not the embryo has rights. Further, the first example would suggest that there is another distinction to be drawn at least in some instances between questions (c) and (d). On these grounds I would suggest that the formulation of question (c) be given priority in the Australian Health Ethics Committee's deliberations.

B. FOUR CONSIDERATIONS

21. How, then, is it right to treat the embryo? The answer to this question, may I suggest, will depend on four considerations. It will depend, in the first instance, on what sort of entity the embryo is. It will depend, in the second place, on the type of treatment to which we wish to expose the embryo in stem cell research. Thirdly, it may also depend on the goals we hope to achieve by exposing the embryo to this type of treatment. Finally, we may ask, what will be the ramifications in terms of public policy if the Australian Parliament or State Governments legislate that these treatments and procedures on embryos be permitted, restricted, or prohibited. I will treat each of these considerations in turn.

22. What sort of entity is the embryo? Here the medical and scientific data are relevant and well-known.¹² The one-celled *zygote* is formed at fertilisation, and after twenty four to thirty six hours begins to divide. It develops into a *morula* at about the sixteen cell stage. At about the fifty to sixty cell stage a fluid-filled cavity begins to appear in the embryo, marking the transition from the morula to the *blastocyst*. At one side of this cavity a group of cells, the *embryoblast*, gradually becomes visible. It is at this stage in stem cell research that the inner cell mass is extracted from the blastocyst and cultured to initiate stem cell lines. The mature human blastocyst, approximately 120 to 140 hours old and consisting of approximately 110 cells, can under appropriate conditions *implant* in the maternal uterus. The so-called "*primitive streak*" develops somewhere between day eight and day seventeen. Following implantation, the human embryo (it is called the foetus after the eighth week) undergoes the following further gestational developments. *Heartbeat* commences during the fourth week. *Cerebral ventricles* are

12. See C. Grobstein, "The Early Development of the Human Embryo", *Journal of Medicine and Philosophy*, 10.3 (August, 1985).

distinguishable by the end of the fifth week, and general *early organ formation* commences. *Sex differentiation* is apparent between the eighth and the tenth week. "*Quickening*" is observed usually between the seventeenth and twentieth week. *Viability* is possible in at least some cases by as early as the twenty-second week. *Natural birth* usually occurs around the thirty-eighth week.

23. More important, however, from a moral point of view than the foregoing physiological data are the various "stages" that are discerned in embryonic and foetal development. *Genetic identity* is established when fertilisation is complete. The embryo then enters upon a stage of *totipotentiality*, prior to cellular differentiation. In its totipotential state the embryo is subject to *twinning and recombination* of embryos ("mosaicism"). This is a very rare occurrence naturally, but there is some evidence that it is now possible to effect twinning surgically, even with human embryos. During this state also it appears that the embryo may be capable of compensating at a subsequent stage of cellular division for the surgical excision of a limited number of its cells. It is thus only subsequent to this stage of totipotentiality that *biological individuation* (as distinct from genetic identity) is definitively established.

Differentiation of cells and function occurs somewhat later. Initially around the time of implantation there is differentiation into *placental* and *strictly embryonic* cells. Further, with the development of the "*primitive streak*" differentiation into the more specific cellular and organic aspects is initiated. *Cerebration* or brainlife does not begin until the end of the fifth week. *Viability* is possible by about the end of the second trimester, and *birth* occurs naturally at about the thirty-eighth week. *Self-consciousness* and the capacity to elicit *desires* and have *interests* is restricted by some more radical commentators to infants who have achieved their second or third year of extrauterine life.

24. Other relevant scientific data are sometimes invoked vis-à-vis the appropriate treatment from a moral point of view to be accorded embryos. It is pointed out that many of the cells of the original totipotential morula develop into placental rather than strictly embryonic and foetal cells. Some embryos, too, develop into moles or into anencephalics. Finally, of course, estimates vary, but there is evidence to suggest that at least one in three, and possibly as high as two in three, originally fertilised zygotes either fail to implant or spontaneously abort. It would also appear that some spontaneous abortions occur during the early weeks of pregnancy.

25. We now have some idea of what sort of entity the embryo is, and how it develops. The second consideration to be taken into account concerns the type of treatment to which the embryo will be exposed in stem cell research. Here it is important to distinguish therapeutic from non-therapeutic experimentation and research. Therapeutic experimentation on the embryo would be directed to the benefit of the embryo

undergoing treatment. Non-therapeutic experimentation, on the other hand, is not directed to the benefit of the embryo undergoing treatment, but, at least indirectly and ultimately, to the benefit of others, presumably in stem cell research to the remedying of a variety of diseases and conditions. Non-therapeutic experimentation on embryos as envisaged in stem cell research, far from benefiting the embryos undergoing treatment, will result in their dismemberment at the blastocyst stage and destruction.

26. It is important to note, however, that although at the present stage of experimentation, the destruction of the embryo is virtually assured, this need not necessarily be so in the future. This may be possible through experimentation on “partial” embryos rather than on “total” embryos. It has been indicated earlier that in the rudimentary totipotent stage of its development the embryo is capable of compensating at a subsequent cellular cleavage for the excision of a limited number of cells from the original main cluster. It has been suggested – and this suggestion was explicitly put to President Bush when he was considering United States policy on stem cell research¹³ – that experimentation could be restricted to this limited number of excised cells, while the development of the main cluster proceeds, to all intents and purposes, unaffected. This variation, however, presently is said to be unproven. It is, indeed, intrusive, but may not necessarily be destructive, and may constitute middle ground in the debate on stem cell research. But the extent of the totipotent capacity of the pre-implantation embryo for compensation would have to be more clearly established before one would feel confident of returning such an embryo to the maternal uterus.

27. The third consideration to be addressed concerns the goals to be sought by what, at least presently, will be destructive non-therapeutic experimentation on embryos in order to produce stem-cell lines. The ultimate goal of producing these stem cell lines will be the curing of a variety of diseases, injuries and conditions by grafting differentiated cells and by regenerating tissue that has been apparently irretrievably traumatised by some previous insult or injury. There is no doubt that these are worthy goals. But besides questioning the means by which these goals are to be achieved, namely, the destruction of embryos, we need also to ask how immediate these goals are, and whether these goals can only be achieved by developing stem cells from embryos.

28. How immediate are these goals? Even the most enthusiastic proponents of embryo-sourced stem cell research are more than a little guarded when responding to this question. They will point out that the research is in its infancy, and that their access to embryos hitherto has been severely restricted. They will further note that there have been

13. *Courier Mail*, 6 August 2001.

promising results in animal experiments, but that success with animals does not always translate readily to humans. There is a vast amount of research to be done and to expect practical applications before five to ten years would be unrealistic and irresponsible. All the more reason, they would conclude, to lift the restrictions and to fund the research to proceed apace.

29. But if these goals are not likely to be achieved in the immediate future and the results are uncertain, how necessary is it for this research to proceed with the unavoidable destruction of embryos? Are there alternative programmes that may offer equally immediate results without involving the destruction of embryos? Recently there have been successful animal experiments using reprogrammed adult cells. Are these an equally viable source of stem cell lines? How do they compare with the embryo-sourced stem cells? Critics, however, will submit that reprogrammed adult stem cell lines do not have the wide clinical applications of those derived from embryos. They will argue that the results are even more uncertain, and that it is far too early to claim that they represent a genuine alternative source to generate stem cell lines. At best they will conclude that we should fund research using both sources, but that priority should still be given to employing embryos as the preferred source. On the other hand, proponents of the use of reprogrammed adult cells will argue that the initial results are very promising, that because this research is very much in its infancy it is premature to argue that adult cells will not have the wide clinical application of embryonic cells, that the significant problems associated with immunological rejection are minimised if a recipient's own adult cells are used, and, of course, that in using this source embryos are neither utilised nor destroyed. They will conclude that priority should be given to advancing the research into the capacity of reprogrammed adult cells to generate stem cell lines, and that there should be at least a moratorium on destructive embryonic experimentation. This is basically the Catholic Church position.

30. This debate among the experts leads naturally to the fourth of the considerations that underlie the question: "How is it right to treat the embryo?" What will be the ramifications in the area of public policy to prohibit, to restrict, to permit or to facilitate stem cell research that involves the destruction of human embryos? Prescinding to a degree from the morality of such research, one might find that there is such controversy or division in the community on the question that the appropriate governmental stance might be to impose a moratorium on the practice until these divisions are resolved. Or one might find that there is general agreement in the community on the acceptability of using embryos surplus to IVF needs, or of using existing embryo-sourced stem cell lines. But there might be much greater diversity of

opinion when the question arises of creating embryos specifically and exclusively for stem cell research.

31. This is not to be interpreted as suggesting that governmental policy should be determined exclusively by community attitudes towards various aspects of stem cell research. One has only to think of Australian majority attitudes in the community favouring reintroduction of capital punishment or excluding refugees to realise that this may be an overly simplistic way to proceed. But, if they are not uniquely determinative of public policy, how much weight should we attribute to these attitudes? They are certainly a factor to be taken into account in determining feasible public policy. But so also are the view of professional medical, scientific, sociological, legal, moral and theological experts. Presumably the Australian Health Ethics Committee will be drawing on these in making recommendations to government, and it is not unlikely that their opinions may differ not only among themselves but also from those of the wider community.

32. It may be necessary, then, as a first (and even repeated) step to inform the community of these professional views and to engage in a series of public consultations in the hope of fashioning a more uniform consensus on the disputed questions. It may still happen, however, that even after such an educational programme, there may remain a significant lack of agreement between the experts' views (some of whom may have a vested interest in initiating, or in prohibiting, the research) and those held in the wider community (some of whom, again, in these areas of scientific and medical manipulation may be overly naïve and optimistic, or overly suspicious and conservative, in their attitudes). The government must take account of these divergences – or convergences – in formulating and implementing policy and legislation or in refraining from formulating. I suspect that such community considerations, both converging and diverging, weighed heavily with President Bush when he decided to support with Federal funding research on already existing embryo derived stem cell lines, but not to extend it to establishing further stem cell lines from embryos surplus to IVF needs or from embryos created specifically for these research purposes. It was, presumably, an attempt to find a middle ground between the expectations of the more radical members of the scientific community (and their prospective patients) and those of the broader community, many of whom are, perhaps justifiably, suspicious of scientific experimentation in general, let alone experimentation involving the destruction of embryos. The recent revelations concerning the disposal of body parts subsequent to post mortem, especially those diverted to the Strontium 90 radiation experiments, have done nothing to allay these suspicions.

C. POTENTIAL AND RESPECT

33. How, then, keeping in mind the foregoing four considerations, is it right to treat the embryo? The common and generally agreed answer is: "with respect". But this answer invites the further question: "Why should the embryo be treated with respect?", and "What degree of respect is appropriate?" I will attempt responses to both these questions.

34. The basic reason why we should respect the embryo is because it is nascent and developing human life. An immediate rejoinder, however, to this claim would be to ask why we should accord this respect to the embryo simply because it is a primitive form of specifically *human* life. After all, we do not accord similar respect to other embryonic forms of mammalian life – to say nothing of other animal and vegetative life. The rejoinder in turn to this response presumably will be in terms of human life being in some sense of the word a "higher" form of life. This rejoinder may, of course, merely convict the respondent of "speciesism", that is, attributing an unwarranted preference to one's own species simply because it is one's own species – a "species prejudice". But this need not necessarily be the case.

35. Briefly, the warrant for attributing this preference to humankind would be in terms of the range, the complexity, the resourcefulness, the creativity and the sophistication of human response and activity. Two areas in which this human superiority is most clearly evident are scientific research and moral evaluation, the precise activities in which the community is presently engaged in debating stem cell research. As far as I am aware no other species indulges in these and other activities of similar sophistication, even in a rudimentary way.

36. But there is a further rejoinder to the thesis that we should treat the human embryo "with respect". It is that, while these may be valid reasons for according preferential status to mature adults of the human species who do engage in this range of activities, they do not have a parallel cogency in respect to embryonic members of the human race. These, even in a favourable environment, seem to engage in no activities other than those associated with cellular and physiological development. What reasons could be advanced for according them a comparable respect?

37. The answer to this question must be in terms of the nature of the connection between the human embryo and the adult member of the human species. The embryo is valued both for what it is and what it will become. Nor are these separate and distinct aspects of its reality. Normally, an embryo is not merely a living, pulsating cellular mass. It is also, because of its inherent potential, in the process of evolving proximately into the next stage of specifically human development, and,

more remotely, into a mature adult member of the human species. I do say “normally”, however, not “invariably”. There are embryos, to be sure, that no longer possess this potential. Because of some inner defect in their physiology they have exhausted their potential and are incapable of evolving into the next stage of human development. The normal embryo, however, does possess this potential, and in an appropriate environment will realise this potential by proceeding to the next stage of specifically human development.

38. “Potential”, then, is not just a way of speaking about the embryo, an extrinsic denomination useful for comparing it with the mature member of the species. It is an intrinsic quality of the embryo which affects and directs its characteristic development. This is perhaps best demonstrated in the early state of the embryo which is called “totipotentiality”. Again, this is not just a way of speaking about the embryo at a primitive stage of its development. It is a property that it possesses at this stage, and one that it does not possess three weeks later. It has the capacity, as we have seen, to develop into one, two or even more biologically distinct individuals. Nor does the fact that this “twinning” can be induced surgically gainsay the intrinsic quality of this property. Twinning can be induced surgically because the totipotential quality is there to be induced, whether naturally or artificially. No amount of sophisticated surgery will induce twinning three weeks later. Note, too, that the realisation of this potential in one, two, or more individuals is decisive not just for the next stage of human development, for example, implantation and the appearance of the primitive streak. There will be one, two or more individual adults because of this particular realisation of potential at this stage.

39. This potentiality, therefore, is the reason why we accord the embryo a special kind of respect distinct from what we accord bone, organ, skin, or even brain. It is based on the distinction, to employ the terminology of the related field of genetic engineering, between germ-line development and somatic-cell development. Thus points and stages in the development of the embryo (that is, fertilisation, the establishing of genetic identity or biological individuation, implantation, the appearance of the primitive streak, cerebral or organic development, consciousness and pain awareness, viability, birth, the capacity to elicit desires and have interests) are adjudged to be significant because they are critical stages in specifically germ-line development. Germ-line development in its turn is thought to have a special importance because its thrust is towards the total and coordinated emergence of a genetically unique, biologically individuated, organically endowed, extra-uterine, self-conscious, etc. mature member of the human species, who precisely because he or she has emerged in this way is capable of the range of sophistication of activities to which we have adverted above. When we

interrupt this line of emergence, especially after one or other of the specified stages has been reached, we are interfering with a process which, because of its possible ultimate result as a totality, is adjudged to be of special importance, and therefore worthy of particular respect.

40. This importance and respect which we accord to the human embryo is also reflected in the parallel field of genetic engineering. Germ-line therapy is addressed in a manner significantly different from the way in which somatic cell therapy is approached. This is not only because of the technical complexity of germ-line gene therapy, but also because it may have consequences for the embryo not just as a particular body cell but as an evolving integrated totality. Because of this there is a real danger that gene manipulation in the embryo may have unpredictable side-effects which will be evident not just in the particular organ or somatic feature which is being addressed, but also either in other associated features or in the organism as a whole and possibly in its posterity. Hence there is much more reluctance on the part of scientists to experiment in this area, and there is need for special care and even more cautious assessment of the relative advantages to be gained. This reluctance, based on the nature of the connection between germ-line development and the emergence of the total, harmoniously integrated member of the species, is paralleled in the understandable fears and, perhaps, prejudices expressed in some sections of the wider community even to minimal forms of genetic manipulation.

D. WHAT DEGREE OF RESPECT?

41. In the preceding sections 33-40, therefore, I have addressed the question: "Why should the human embryo be treated with respect?" I have suggested two sets of reasons in response. The first set concentrates on the implications of the fact that the embryo is specifically *human*. The second set directs attention to the *continuity of the developmental potentiality* of the embryo in its growth towards maturity. What ramifications do these responses have when the further question is posed: "Yes: but *what degree of respect* is appropriate to accord to the human embryo?", and quite specifically: "Is it ever justifiable to interrupt the development of the human embryo, for example, as in stem cell research, at the blastocyst stage?"

42. The first ramification relates to the legitimacy of stipulating certain points or stages prior to which it is morally acceptable to interrupt the development of the embryo, but subsequent to which such interventions should not be permitted. If the second set of reasons outlined above (that is, continuity of developmental potential) are persuasive, it is difficult to see why such "drawings of the line" should be legitimate. Each stage is linked directly to the next stage in development, and indirectly to all the subsequent stages in the genesis

of the mature adult member of the species. It is difficult to see on this analysis why it should be legitimate to interrupt the process at one stage and not at a subsequent stage. There is not, as it were, any natural hiatus that would underlie such a distinction.

43. Secondly, would it not seem equally arbitrary to select one embryo for stem cell research and its destruction, while permitting its sibling(s) to realise its/their developmental potential unhindered? What legitimates interference in the process in the one instance and not in the other? Whatever status and "respect" one attributes to the embryo and its developmental potentiality, why should one embryo be permitted to develop and the other be destined for research and destruction? This will inevitably savour of unjustifiable discrimination unless one can point to a relevant difference. It is only if the process is regarded as entirely value-free, that is, if there is *no* respect due, that such arbitrary discrimination would not be morally questionable. But if it is granted that the embryo is entitled to respect, why is one embryo "respected" in one way, and the other in another (if destruction can be construed as "another" form of respect)?

44. There are, of course, rejoinders to the foregoing lines of argument. Characteristically they consist in pointing to differences between embryos and stages of embryonic development. The *Warnock*, the *Waller* and the *Andrews* Reports, for instance, all advert to the distinction between "normal" embryos, that is, those destined for implantation, "surplus" embryos, that is, to IVF needs, and "embryos created specifically for research purposes". Three of the sixteen members of the Warnock Committee thought that destructive research on normal and surplus embryos should not be permitted under any conditions, nor should embryos be generated specifically for experimental purposes.¹⁴ A further four members believed that embryos should not be brought into existence specifically for the purpose of exposing them to experimentation, but would permit experimentation on embryos irredeemably surplus to IVF requirements. The other nine members approved generating embryos for research purposes as well as permitting experimentation on surplus embryos.¹⁵

In the Waller Committee the various points of view were differently represented. Two of the nine members thought that there should be an absolute prohibition on embryo experimentation under any conditions. A further five members believed research and experimentation should be restricted to surplus embryos. The other two members would permit experimentation not only on surplus embryos but also on embryos

14. *Warnock Report*, 11, 22-30, and pp. 90-94.

15. *Warnock Report*.

generated specifically for the purpose.¹⁶ The Andrews Committee voted 6/4 in favour of permitting stem cell research on embryos surplus to IVF, but recommended that there should be a ban on the deliberate creation of embryos for research purposes. Further there should be a moratorium on the creation of embryos by means of somatic cell nuclear transfer for three years.¹⁷

45. These distinction, however, between “normal”, “surplus” and “research” embryos of themselves generate no moral reasons for differences of treatment. They are all simply embryos. Their only distinction is extrinsic, in the destination to which in the IVF process they are arbitrarily assigned by clinicians and researchers. Far from these distinctions being morally relevant, they invite us rather to reflect whether the processes by which surplus embryos are generated and embryos are produced specifically for research purposes are morally justifiable. Particularly at the present stage of clinical IVF development, it is difficult to see why embryos surplus to immediate IVF needs should be generated at all. That they continue so to be generated seems to suggest that the distinction between “surplus” embryos and embryos “generated for research purposes” is a distinction without a difference, and that the category of “generating surplus embryos” has collapsed into “generating embryos for experimental purposes”. The legitimacy of this latter procedure is precisely the point at issue, and the appeal to this difference between “surplus” and “research” embryos as a criterion for justifying morally difference of treatment is therefore doubly suspect. The fact that through IVF we are now *able* to interrupt the process of embryonic development prior to implantation and produce “surplus” embryos does not of itself *morally legitimate* such a procedure and the consequent possible availability of embryos for research purposes. Rather it should invite us to question the motivation of those who have been responsible for generating the 60,000 embryos presently in storage in Australian clinical vaults.

46. A further line of rejoinder to these “absolute respect” lines of argument, however, will point to the fact that a high proportion of embryos perish, apparently to no purpose, in natural reproduction. Why, then, should we cavil at destroying them in the good cause of remedying illness and trauma through stem cell research? If only a limited proportion of embryos (33-66%) succeed in developing into

16. The Committee to Consider the Social, Legal and Ethical Issues arising from In Vitro Fertilization, *Report on the Disposition of Embryos produced by In Vitro Fertilization*, August, 1984, 58-61.

17. House of Representatives Standing Committee on Legal and Constitutional Affairs, *Human Cloning: Scientific, Ethical and Regulatory Aspects of Human Cloning and Stem Cell Research* (Canberra: Australian Government Printer, August 2001) 118-25, 225-26 (*Andrews Report*).

mature adults, does not this in some way justify using one or two out of every three embryos in stem cell research?

47. There are a number of considerations to be taken into account in responding to this argument. Firstly, it should be noted that in the very early stages relevant to stem cell research the ratio of embryos that are “lost” is much lower, apparently in the range of 10%-30%. Secondly, in most cases it is difficult to discern, particularly in the early stages of cellular development, which embryos are destined to be “lost”. The inspection techniques at this early stage are fairly primitive, and unless more intrusive techniques which are liable to affect the subsequent viability of the embryos are employed, it will be very difficult to determine which embryos are likely to develop into fetuses, infants and mature adults and which are destined to abort spontaneously. Thirdly, even if these “defective” / “lost” embryos could be identified, they are unlikely to be the class of embryos most safe and suitable from which to develop stem cell lines. Fourthly, it would appear that the loss of many of these embryos is attributable to maternal environmental factors rather than to any intrinsic defect in the embryo. Fifthly, in the absence of any clear and definitive techniques to identify potentially “lost” embryos, it seems arbitrary and discriminatory to select on purely statistical grounds a set of embryos for destruction in the cause of stem cell research solely because in some other circumstances some of them may not successfully implant and develop. Finally, the argument assumes the principle that we are justified in intentionally replicating artificially what occurs naturally by hazard. Because an innocent pedestrian is killed in a traffic accident, or plague, or earthquake, we are not justified in going out and shooting innocent passers-by. The principle may be true in some instances, but, as the foregoing examples illustrate, it cannot simply be assumed. It is precisely the principle at issue in the argument, and cannot therefore be invoked without being involved in a *petitio principii*.

48. There is a variation of this defective/“lost” embryo argument specifically in respect of embryos “surplus” to IVF needs. These, it is argued, are destined ultimately to succumb in any event. Their use in stem cell research will, therefore, redeem their dying, as it were, and make a virtue out of necessity.

49. Again there is a variety of considerations to be taken into account in responding to this argument. Many of them have been rehearsed before, so I will not discuss them again in detail. Firstly, there is the rejoinder just discussed. Is it not arbitrary and discriminatory to select one embryo for research involving its destruction while permitting its sibling to realise its developmental potentiality into a mature member of the human species? What justifies this differentiation

in “respect”? As we have already seen, purely statistical grounds are hardly sufficient justification.

50. Secondly – also discussed in more detail above – the description of these embryos as “surplus”, in contradistinction to “normal” or “frozen” or “destined for research” embryos, is a fiction, a purely extrinsic denomination. They are all simply embryos. Rather than these characterisations in any way justifying discriminatory treatment, all these extrinsic distinctions do is to invite us to reflect critically on the processes by which “surplus” embryos have been generated and stored.

51. Thirdly, granted these processes which bespeak very little of respect and much of commodification, it seems to me eminently arguable that, rather than “redeeming their dying” and “making a virtue out of necessity”, in destroying these “surplus” embryos in stem cell research we are adding insult to injury. We have connived at their proliferation, we have deprived them of their proper environment, we have denied them the opportunity to develop into mature members of the human race, and we have frozen, thawed and commodified embryonic human life in a variety of ways. Now we are proposing to visit the final indignity on them by arbitrarily selecting some of them to experiment on to their destruction, and this for uncertain ends and distant goals for which alternative non-destructive protocols are already being developed. Rather than exposing them to this final indignity, might we not redeem our own humanity by allowing them to succumb unviolated?

52. There are two other arguments that should be considered in determining what degree of respect should be accorded to the human embryo. The first arises from the widespread availability of abortion. The second suggests that the argument based on the continuity of developmental potentiality of the embryo is not necessarily as persuasive as it may at first appear.

53. Induced abortion is widely available. But even with early detection of pregnancy the foetus that is subsequently induced is at a much later stage of development than the embryo of the blastocyst stage. If we do not hesitate to abort these foetuses, why should we cavil at destroying embryos at this very early stage of their development?

54. Now, there are a whole range of arguments that are advanced in support of induced abortion. But those that seem to have most purchase, and those which are most condoned by the community and countenanced by legislation, are those which centre round the threat that an unplanned pregnancy may constitute to the life or the physical or psychological well-being of the prospective mother. More radical supporters of “abortion on demand” will argue that the woman alone can judge the dimensions of this threat. Others will counter that expert medical/social opinion should also be invoked before deciding that eliminating the threat by destroying the pregnancy is morally justifiable.

But whatever their differences and whatever their reservations or lack of them, supporters of abortion characteristically see the mother-unplanned foetus relationship in terms of fear and threat, that is, that the foetus is in some primitive sense of the word an “aggressor” against the life and well-being of the mother. The mother is therefore justified in repelling the aggressor by destroying the foetus.¹⁸

55. The only point I wish to make in this context is that the situation of destroying embryos in stem cell research is quite different. These embryos in no sense constitute a threat. If left to themselves they will succumb. We cannot assume that what we may be justified in doing in “self-defence” we are equally justified in doing to promote our own or others’ interests. The parallel, therefore, between destroying embryos/foetuses in induced abortion and destroying them in embryo experimentation does not obtain.

56. The second argument questions the validity of the “continuity of developmental potentiality” argument. Firstly, it is argued that the argument establishes too much. The argument is construed as proposing that, because of the developmental potential of the embryo and the intimate connection between a particular point of development and its preceding and succeeding stages, it is not legitimate to “draw a line” before which destructive embryo experimentation is justified, and subsequent to which it is not. Is it not a consequence of this argument that contraception is *a pari* morally unacceptable, in so far as it interrupts the stage immediately prior to fertilisation?

57. Traditional Catholic moralists have accepted this implication. Others, however, would see a genuine hiatus between the preceding independent lives of the *gametes* and the nascent life of the *zygote*. The chief reason for arguing that this hiatus is morally significant is that it requires a positive free act of the parents (or IVF clinicians) to initiate a process which subsequently proceeds independently according to the ordinary canons of embryological and foetal development. Further, while a positive free act of a parent or her agent, for example, in induced abortion, can interrupt this development, it should not be assumed that there is no moral difference between the action of initiating this development and subsequently interrupting it. Thus, as indicated above, we circumscribe induced abortion with legislation.

58. Further again, there are significant differences between the cellular structure of the gametes and that of the zygote or embryo. The gametes are haploid cells, possessing only 23 chromosomes, while the zygote, like all the other human cells which develop out of it (except, of course, its gonads) possess the normal complement of 46 chromosomes. This is the scientific hiatus on which the moral difference is based, and

18. See J. J. Thomson, “A Defence of Abortion”, *Philosophy and Public Affairs* 1 (1971), 47-66.

which does justify the “drawing of the line”. The gametes “produce” the embryo, but only the embryo develops into, “becomes”, the mature adult.

59. This distinction between the “potential to produce” and the “potential to become” is explored in a perceptive and challenging article by Stephen Buckle.¹⁹ While he accepts at least in principle the validity of arguing from the embryo’s potential, nonetheless he claims that the argument is not compelling because there is a failure to maintain identity through the developmental process from fertilised ovum to mature adult of the species. He argues that the fertilised ovum subsequent to syngamy is not identical with the embryo subsequent to implantation because only part of the fertilised ovum, the blastocyst, subsequently develops as the embryo and foetus. The remaining cells are dedicated to forming placental tissue. The fertilised ovum, therefore, while it has the developmental potential to *produce* the developing embryo, does not have the potential to *become* the embryo, foetus and mature adult. So no more than the sperm and ovum which *produce* the fertilised ovum should the fertilised ovum itself be respected, because in itself prior to the formation of the blastocyst it does not possess the capacities which are actuated subsequently in maturity, and in virtue of which the embryo is entitled to respect. “Producing” in Buckle’s terminology does not require the maintenance of identity across the developmental changes. “Becoming”, on the other hand, does require identity to be maintained.

60. Buckle explores these notions in the context of what I have called the argument of the continuity of developmental potentiality of the embryo. He concludes that the fertilised ovum “produces” rather than “becomes” the mature adult of the species. For this reason he suggests that the early embryo prior to the blastocyst stage is entitled to no greater respect than the original gametes. Only in passing, however, does he respond to the counter-argument to his conclusion, which construes the placenta as an external organ of the developing embryo rather than as an independently developing organic unit (belonging to the mother?)²⁰

61. Further, even if the criticisms do cast doubt on the validity of the argument from potential, all it would establish is that it may in certain circumstances be permissible to accord only limited respect to the very early stages of embryonic development. But it would not justify destructive experimentation on the blastocyst, which is precisely what is required for stem cell research. For it is the blastocyst on Buckle’s account which does “become” the developing embryo, foetus and mature adult of the species.

19. S. Buckle, “Arguing from Potential”, *Bioethics* 2.3 (July 1988), 227-53.

20. Buckle, “Arguing from Potential”, 240, 252.

E. CONCLUSION

62. The foregoing considerations have been deployed to argue that the Australian Health Ethics Committee should recommend to the Council of Australian Government that destructive experimentation even for the purposes of stem cell research should not be permitted on embryos originally intended for implantation but now surplus to IVF needs. Rather, unless there are “parents” ready to “adopt” them, they should be allowed to succumb. Their dignity as potential mature members of the human species requires this of us. To select one embryo for destructive experimentation and its sibling for implantation is highly arbitrary and irresponsible. Further, the goals for which they are being destroyed in experimentation are distant and uncertain, and alternative non-destructive protocols with adult stem cells are currently being developed. Finally, the procedures by which these embryos surplus to IVF needs have been proliferated have become, at least recently, quite suspect. There is growing evidence from IVF specialists that good practice in the profession requires that no more than one or at most two embryos should be generated, and that the best prospects of obtaining a pregnancy are to implant only one or two embryos in the maternal uterus. Clinics that do not conform to these standards and needlessly proliferate embryos may need to be reviewed by an appropriate professional body.

63. It has been argued in conclusion that unless we permit destructive experimentation to take place on embryos surplus to IVF needs, Australia will fall behind the rest of the world in stem cell research. It is interesting to note, however, that even as committed a proponent of destructive embryo experimentation as Professor Alan Trounson in his submission to the Andrews Committee conceded that the existing stem cell lines were sufficient for both research and the development of stem cell banks, and that there was no need to use any more embryos to create embryonic stem cells.²¹ He was supported in this assessment by Mr Robert Klupacs, the General Manager and Chief Executive Officer of ES Cell International Pty. Ltd.²²

64. Nor would Australia be the “odd man out” if it stood by the existing bans in Victoria, South Australia and Western Australia on destructive embryo experimentation and extended the ban nationally. As the Working Party draft report of 7 December 2001, for the Council of Australian Government notes (p. 60), there are a number of countries where no human embryo research is currently permitted. If Australia were to take the stance outlined by President Bush in the United States

21. *Andrews Report*, 120 (see footnote 17).

22. *Andrews Report*, 120 (see footnote 17).

and extend it to include all private clinics and laboratories as well as public instrumentalities, we would definitely not be in a minority of one, and stem cell research on cells derived from human embryos – however regrettable I personally would view such research to be – could still proceed in competition (if that is the way the scientific enterprise is currently conducted) with the rest of the world.