

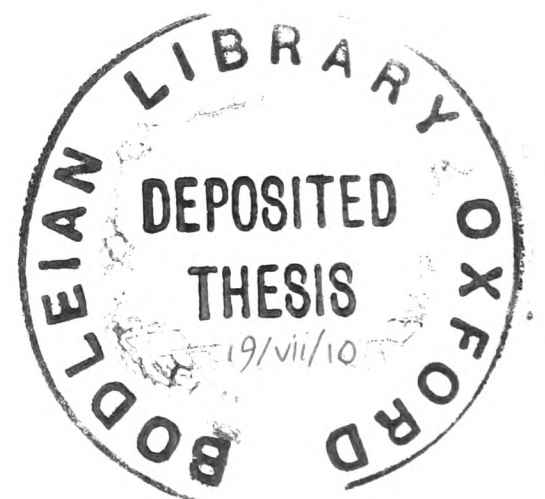
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Stem Cell Research

A critical study of the thought of John
Harris, Mary Warnock and H.Tristram
Engelhardt in the light of Christian
holistic anthropology

Angeliki Kerasidou

**Harris Manchester College
Oxford
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STEM CELL RESEARCH

A critical study of the thought of John Harris, Mary Warnock and H. Tristram Engelhardt in the light of Christian holistic anthropology

By
Angeliki Kerasidou
Harris Manchester College
DPhil in Theology
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Short Abstract

The primary concern in this thesis has been to examine the moral status of the embryo and whether it is morally justifiable to use embryos as research material. This has been the topic of a fervent debate in the area of bioethics for the last decade. Proponents of embryonic stem cell research proclaim the paramount importance of such research and they argue for the use of embryos in research, on the ground that they are not persons and hence, they do not have a moral worth. The opponents of embryonic stem cell research, on the other hand, insist that embryos are persons and have full moral value as a result of their humanity, therefore embryos should never be used as mere means. I believe the moral status of human embryos needs not be an 'all-or-nothing' issue. Although, embryos lack most, if not all, the characteristics of personhood, they still have something that can award to them a basic level of moral worth that is integral to their humanity.

This thesis argues for the intrinsic moral value of human embryos in virtue of their intrinsic nature. First, I look at the advances of biomedical research and all the possible future benefits of stem cell research. Then, in order to reveal the intrinsic nature of human embryos and consequently human beings, an anthropological theory that takes into account the complexity of human life is required. In search for such an anthropological account a critical appraisal of the thought of John Harris, Mary Warnock and H. Tristram Engelhardt is undertaken. In contrasting the thought of Harris and Warnock, difficulties arising from their understanding of human nature have been seen to be problematic, mainly their inability to distinguish between the terms 'full moral value' and 'intrinsic moral value'. In contrast, Engelhardt being a Christian theologian, proclaims the holistic anthropological theory that is to be found in the Christian traditions. However, he argues that such an anthropological theory is not tenable outside the Christian edifice. I show that contrary to Engelhardt's view, holism can be justified not only theologically but philosophically and scientifically. I suggest that holism better captures the fundamental nature of human beings and hence, can lead us to a more accurate assessment of the moral status of the human embryo. I conclude that the deliberate creation and destruction of human embryos is morally wrong, especially when other alternatives for the continuation of this type of research are widely available.

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Deos placatos pietas efficiet et sanctitas; proxime
autem et secundum deos homines hominibus
maxime utiles esse possunt.

Cicero, De officiis, 2, 11

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Chapter 1

INTRODUCTION

What is a human being? What is a human person? What kind of moral value does a human embryo have? These are old questions which the great advances in biomedical research have recently brought to the centre of the public ethical debate. In 1998 James Thomson managed, for the first time, to isolate human embryonic stem cells from a spare *in vitro* fertilized (IVF) embryo.¹ This achievement allowed biotechnologists to study the unique abilities of stem cells. They believed that human embryos may hold the key to healthier, and perhaps, eternal life. Early in its development the human embryo consists of cells, called stem cells, that have the ability to differentiate and grow into any type of body cell that is found in the human body. By studying these cells and unravelling the secrets they hold, bioscientists hope that they will be able to find new ways of combating life-threatening and debilitating diseases, as well as studying the process of cell development and cell regeneration.

The enthusiasm for new knowledge and new therapeutics brought embryos to the forefront of everybody's attention. Research on embryos has been characterised as a new

¹ Thomson, J. A., Itskovitz-Eldor, J., Shapiro, S. S., Waknitz, M. A., Swiergiel, J. J., Marshall, V. S., Jones, J. M., 'Embryonic stem cell lines derived from human blastocysts', *Science*, vol. 282 (5391), 1998, pp. 1145-1147.

practice in the area of biomedicine that requires particular attention and ethical consideration. The U.S. President's Council on Bioethics in 2002 claimed that research on embryos marked the crossing of a '...major moral boundary'².

However, this is not the first time that human embryos were used in biomedical scientific research. The *in vitro* fertilization (IVF) technique was developed and perfected in the 1930s by conducting numerous experiments on human embryos. Various methods of laboratory fertilization were investigated to determine their efficacy before researchers would even consider transferring an *in vitro* fertilized embryo to a woman.³ However, this particular research did not cause an ethical turmoil of the sort that embryonic stem cell research has. The reason was that the scope of IVF research was to find a secure way to achieve live births of embryos conceived artificially, *ex utero*. This was considered beneficial to the embryos involved. To the contrary, embryonic stem cell research does not aim at helping the embryo/subject involved.

The idea of creating embryos for the sole purpose of using them as tools for biomedical research, combined with the announcement of the successful cloning of the first mammal using somatic cell nuclear transfer (SCNT) technique just a year before, in 1997, caused a great upheaval in the philosophical and ethical world.⁴ For the first time in the history of scientific research the discussion regarding the ethical implications of the research and its outcomes ran in parallel with, and in some cases preceeded, the actual work.

² President's Council on Bioethics, *Human Cloning and Human Dignity: An Ethical Inquiry*, 2002, p. 132, available at, www.bioethics.gov.

³ Edwards, R., and Steptoe, P., *A Matter of Life: The Story of a Medical Breakthrough*, New York: William Morrow and Company, 1980; Soupart, P., and Strong, P. A., 'Ultrastructural Observations on Human Oocytes Fertilized in Vitro', *Fertility and Sterility*, vol. 25 (1), 1974, pp. 11-44.

⁴ Wilmut, I., Schneike, A. E., McWhir, J., Kind, A. J. and Campbell, K. H. S., 'Viable offspring derived from foetal and adult mammalian cells', *Nature*, vol. 385, 1997, pp. 10-13.

The central focus of the ethical discussion surrounding embryonic stem cell research is the controversial issue of the moral status of the human embryo. Many ethicists and philosophers believe that using human embryos solely as research material is ethically unproblematic. They believe that embryos are too undeveloped to have direct moral value. They are merely microscopic instances of life with none of the capacities or abilities that are characteristic of human persons. Millions of embryos are destroyed every day around the world due to natural or artificial procedures. Natural miscarriage is a very common phenomenon. In the majority of cases, early natural miscarriages occur without the woman ever realizing it. Furthermore, abortion is a legal and ethically acceptable procedure that results in the death not only of embryos but of more developed fetuses as well. Therefore, if the death of embryos seems to be an acceptable fact of life, why should we not allow scientists to use embryos and even destroy them, if necessary, for research that could potentially benefit the whole of humanity?

Although most of the opponents of embryonic research understand very well the great benefits that could come from such scientific investigations, they refuse to overlook the fact that, as they claim, these benefits would come at a very high cost. They believe that human embryos have full moral value in virtue of their humanity. Therefore, we are morally obliged to treat them as any other human being. Ethicists and philosophers, especially those with a theological background, are very concerned with the ethical damage such a practice could cause to the moral conscience of humanity. They fear that using human embryos as research tools would imply that human life is valueless and that people should be allowed to use other, less qualified and more vulnerable humans as means in order to achieve their own ends. They are worried that the horrors similar to

those of the Second World War and the atrocious experiments of Dr Josef Mengele would be repeated with everybody's 'blessings'.

Numerous bioethical committees have been established around the world to discuss the controversial issues relating to stem cell research and give clear guidelines to the biotechnologists to proceed with their research. However the issue has proved to be much more complicated and difficult to solve than initially suspected. Annas, Caplan and Elias argue:

'To create embryos solely for research - or to sell them, or to use them in toxicity testing - seems morally wrong because it seems to cheapen the act of procreation and turns embryos into commodities. Creating embryos specifically for research also puts women at risk as sources of ova for projects that provide them no benefit. ...The moral problem with making embryos for research is that as a society we do not want to see embryos treated as products or as mere objects, for fear that we will cheapen the value of parenting, risk commercializing procreation, and trivialize the act of procreation. It is society's moral attitude towards procreation and the interests of those whose gametes are involved in making the embryos that provide the moral force behind the restriction or prohibition of the manufacture of embryos for nonprocreative uses.'⁵

Today, following ten years of discussions and debates, the problem still holds.

Jeff McMahan, on the other hand, maintains that '[T]o kill an early embryo is morally comparable to killing both a sperm and an egg that would otherwise have fused to form a zygote. Indeed, on this view, there is not even any significant moral reason to prefer the new technique for acquiring hESCs [human embryonic stem cells] that allows the embryo to live to the older technique that involves killing the embryo at five or six days.'⁶

Both sides of the debate put forward strong arguments to support their view, and neither side is prepared to give ground. One could conclude from this long and

⁵ Annas, G., Caplan, A. and Elias, Sh., 'The Politics of Human-Embryo Research – Avoiding Ethical Gridlock', *New England Journal of Medicine*, vol. 334, 1996, pp. 1329-1332 (1331).

⁶ McMahan, J., 'Killing Embryos for Stem Cell Research', *Metaphilosophy*, vol. 38 (2-3), April 2007, pp. 170-189 (188).

painstaking debate that regardless of the rational arguments presented by the pro-research groups, justifying why one should not consider human embryos as beings with moral value, the moral intuition that human embryonic life is valuable still prevails. It is true that the most fervent proponents of the moral value of human embryos are Christian thinkers and philosophers that subscribe to a particular theological dogma. Ideas that spring from specific religious dogmas and metaphysical preconception are usually met with disbelief and suspicion from a large part of the secular society. Nonetheless, many people are still reluctant to abandon the idea that human life is somewhat valuable.

Scientists and ethicists who have been preoccupied with the question of the moral status of the human embryo tend to think of it in absolute terms. On the one hand, there are those who understand moral status as a derivative of personhood. Persons are commonly described as beings with advanced cognitive abilities that are able to demonstrate capacities like self-awareness and language. Human embryos cannot demonstrate such capacities and therefore do not qualify as persons. Hence, they are regarded as *morally intrinsically valueless*. On the other hand, there are those who proclaim the absolute moral value of human embryos. They believe that the fact that human embryos belong to the species *Homo sapiens* is in itself sufficient to make them “persons” and consequently for them to be awarded with *full* moral worth.

It is not only religious groups but also secular ones that seem hesitant to abandon the view that human life, in every form and shape, has a moral value that should be recognised and respected. This is evident in the reports of many bioethical committees which make reference to our obligation to respect the value of human embryonic life. It

seems, then, that the Christian idea of sacredness of human life is not just a dogmatic belief but a view deeply embedded into human conscience.

This thesis will examine this issue and attempt to achieve two major tasks; the first one is to offer a justification for the general intuition that the human embryos have a certain moral value, and therefore should not be treated as valueless and disposable objects. The second task is to suggest a way that theological ideas regarding the moral status of the human embryo can enter the public bioethical debate without requiring from the public to accept the whole package of doctrinal beliefs.

In this thesis I will suggest that human embryos have intrinsic moral value in virtue of their nature, and therefore deserve respectful treatment. I will distinguish between the terms 'intrinsic moral value' and 'full moral value'. Full moral value is the type of value that depends on a cluster of characteristics and qualities normally ascribed to human persons. Although the human embryo cannot be awarded full moral worth, it can be endowed with intrinsic moral value in virtue of its intrinsic nature. The fact that human embryos are also human organisms and belong to the same species as human persons is sufficient to award them with a basic level of moral value. In order to unravel the intrinsic nature of human embryos we need to look at the anthropological theories that are used to underline ethical decision-making regarding the status of human embryos. To the existing secular theories I will suggest an alternative one that stems from the Christian tradition. I will argue for a holistic understanding of the human being. This is an anthropological theory that sees humans as psychosomatic unities and has its roots in the traditional Judeo-Christian philosophy. I will demonstrate that such a view can be supported philosophically and scientifically even outside the realms of the Christian

tradition, and play an active role as an alternative theory among other secular ones in the public biomedical debate.

Introduction to Chapters

Chapter 2 will set the scientific and ethical background of embryonic stem cell research. It will offer an overview of the progress of human embryonic stem cell research in the last decade and an introduction to the current ethical debate regarding the moral status of human embryos. Also, it will demonstrate the immense importance of this particular scientific investigation for the future and the welfare of humanity and will introduce the reader to the most popular and influential views that dominate the ethical controversy and the rationale behind each one.

Stem cells are undifferentiated cells found in all multi-cellular organisms and have the ability to develop through differentiation and cell division into any type of body cell with a more specialized function such as muscle cells, heart cells, blood cells or brain cells. Another unique quality that stem cells possess is that they can proliferate *ad infinitum* and potentially produce endless lines of identical pluripotent stem cells. There are four main categories of stem cells: (i) embryonic stem cells that can be derived from the blastocyst; (ii) foetal stem cells that can be found in the amniotic fluid and the placenta of foetuses; (iii) embryonic germ cells that can be obtained from the primordial germ cells; and (iv) adult stem cells that can be found in all post-birth organisms.

Embryonic stem cells can be acquired from embryos that are created in a laboratory either through *in vitro* fertilization or the somatic cell nuclear transfer technique, commonly known as cloning. The benefit of using the cloning technique - referred to as therapeutic cloning - is that it creates embryos that are biologically identical to the person who provided the somatic cell. Using embryonic stem cells cloned from a patient for the treatment of a disease eliminates the need for immunosuppressive drugs and reduces the risk of infections. However, this risk can also be avoided if foetal or adult stem cells derived from the patient him/herself are used. In the past couple of years scientists have been trying to circumvent the ethical problems of using human embryos in research by developing new methods of acquiring material for, and conducting, stem cell research. Human embryonic stem cells can be created, for example, by fusing animal eggs with human somatic cells. This cloning method allows the creation of human embryonic stem cell lines for research without the need to create and destroy human embryos. Recently the creation of human/animal cytoplasmic hybrids (cybrids) became legal in the UK. Also, a way to turn somatic cells into pluripotent cells by introducing certain genes has been discovered. These cells are called induced pluripotent stem cells (iPS cells) and are believed to be identical to natural pluripotent cells. Table 1 lists all the possible types and sources of stem cells:

Stem cell source	Potency	Naturally occurring or derived artificially?	Derivation of stem cells
Embryonic stem cells	Pluripotent	Naturally occurring	From in vitro fertilized or cloned embryos
Foetal stem cells	Pluripotent	Naturally occurring	From the umbilical cord blood or the placenta
Embryonic germ cells	Pluripotent	Naturally occurring	From the primordial germ cells
Adult stem cells	Multipotent	Naturally occurring	From tissue or organs of adult organism (e.g. bone marrow, blood vessels, brain, pancreas, dental pulp)
Cybrids	Pluripotent	Artificially derived	From cloned embryos created by the fusion of an animal oocyte and adult somatic nuclear DNA (e.g. from a skin cell)
iPS cells	Pluripotent	Artificially derived	From adult somatic cell by inducing an expression of certain genes.
Altered Nuclear Transfer	Pluripotent	Artificially derived	From cloned adult somatic cells with preemptive alteration to ensure that no embryo is created

The applications of stem cell research are various and can be classified into five categories: (i) discovery of information regarding human development; (ii) drug testing; (iii) creation of cells and tissue that can be used in potential replacement therapies; (iv) toxin testing, and; (v) gene therapy testing. So far, only adult stem cells have been successfully used for therapeutic applications on humans. Adult stem cells have treated up to 58 conditions in human patients, among them Parkinson's disease, leukaemia, ovarian and testicular cancer. Embryonic stem cells have not yet gone through clinical trials. James Thomson, the scientist who first managed to derive human embryonic stem cells from a spare IVF embryo, believes that even if transplantation applications are still far from possible, all of the possible applications of this technique, in addition to the great knowledge it can give us about the human body, make persisting with the research worthwhile.⁷ However, regardless of the potential future benefits, very few countries (in Europe only Sweden, Belgium and the UK) allow the creation and destruction of embryos for biomedical research. This is due to the ethical questions raised by a form of research that deliberately creates and then destroys human embryos.

There are two major views regarding the ethicality of embryonic stem cell research. There is the group that believes that embryonic stem cell research is of paramount importance for the future and welfare of humanity and it should be permitted and supported. According to their view, only human persons have moral rights and only persons should be the subjects of direct moral concern. A human embryo is just a ball of

⁷ Boyle, A., 'Stem Cell Pioneer does a Reality Check: James Thomson reflects on Science and Morality', *MSNBC*, 25/06/05, viewed on 31/07/07, <http://www.msnbc.msn.com/id/8303756/>.

microscopic cells that can be extremely useful for research and therapeutic applications but has no moral value of itself and therefore cannot be the subject of direct moral rights. Among the philosophers and ethicists that endorse this view are Peter Singer, Helga Kuhse and Julian Savulescu. The opponents of embryonic stem cell research have a completely opposite view concerning the moral status of the human embryo. Robert George, Alfonso Gómez-Lobo and Don Marquis are three of the thinkers who claim that embryonic stem cell research is ethically wrong because it entails the destruction of human life. They believe that human embryos have the same moral value as any other human being, and for this reason should never be used as mere means to other people's ends. As stated earlier, it is important to keep in mind that it is usually Christian thinkers and philosophers who support the view that human life, at any stage of its development, has full moral value and oppose to human embryonic stem cell research. In between these two extremes, there are a number of different views which argue that human life acquires moral value: (i) after the fourteenth day of fertilization; (ii) at the moment of implantation; (iii) at the moment of quickening; (iii) when the foetus becomes viable outside the womb; or (iv) at birth.

The next two chapters, Chapter 3 and Chapter 4, will take us deeper into the ethical debate. For the scope of this thesis, I have chosen to focus on the theories proposed by the philosophers John Harris, Mary Warnock and Hugo Tristram Engelhardt Jr.. John Harris and Mary Warnock are two of the most influential thinkers in the area of bioethics. Both of them support embryonic stem cell research and have significantly contributed to public policy making regarding embryonic stem cell research, a fact which demonstrates that their views are greatly valued by bioethics experts as well as the

general public, and, therefore, makes them ideal representatives of the most popular theories regarding the moral status of the human embryo. Tristram Engelhardt was chosen as the third figure for the following reasons. He is one of the very few Orthodox theologians that have preoccupied themselves with bioethical issues, and he is unique in his position that Christian ideas should be kept away from the contemporary bioethical debate.

In Chapter 3, I will critically discuss two possible ways of resolving the problem of the moral status of the human embryo undertaken by leading thinkers in the field of bioethics: John Harris and Mary Warnock. I will attempt to expose their ethical theory regarding the moral status of the human embryo and whether it is ethically suitable to use it for research purposes by considering five questions; (i) What is a human being?; (ii) What is a person?; (iii) Are there human beings that are not persons and persons that are not human beings?; (iv) What is a human person? (v) What is the moral status of the human embryo?

John Harris, a secular ethicist, attempts to answer the aforementioned questions and ultimately the question of the moral status of the human embryo from a personalist stance. Along with Helga Kuhse, Peter Singer,⁸ Michael Tooley⁹ and Mary Anne Warren¹⁰, he belongs to the group of ethicists that argue that human embryonic life is too rudimentary to have any kind of direct moral value. What is morally important is not human life *per se* but personal life. The fact that we think of non-human beings, such as chimpanzees as having the same moral status as we do, means that it is not humanhood

⁸ Kuhse, H. and Singer, P., 'Individuals, Human and Persons: The Issue of Moral Status,' in *Embryo Experimentation: Ethical, Legal, and Social Issues*, Peter Singer, et al. (eds.), Cambridge: Cambridge University Press, 1992.

⁹ Tooley, M., *Abortion and Infanticide*, New York: Oxford University Press, 1983.

¹⁰ Warren, M. A., 'On the Moral and Legal Status of Abortion,' *Monist*, vol. 57, 1973, pp. 43-61.

but personhood that grants us the right to life. Self-consciousness, self-awareness, reasoning and agency are among the characteristics that indicate full moral status. Only persons, both human and non-human, have full moral value and deserve to be respected and protected. According to Harris, it is unjust and discriminatory to believe that human beings deserve any kind of special treatment or are ethically more important than other living beings. He calls this view speciesism. Human beings become morally valuable only when they become persons and they stop being morally valuable when they lose personhood.

Harris also rejects the argument from potentiality - that is the view that human embryos have moral value because they can grow to become adult human persons - on the grounds that it is irrational to "take an acorn for an oak tree". Potentiality does not carry any moral value, he argues. One could be valued for the qualities and the abilities that one possesses at the moment his or her value is being assessed, not for what s/he had in the past or could have in the future. For these reasons he believes that we should not treat human embryos as if they are already persons, and consequently we should not endow them with full moral rights. Harris maintains that being a person is what is fundamentally important and what makes one morally significant.

By comparison, consideration is given to Mary Warnock who believes that being human is of ethical importance. 'Human being' and 'person' are terms almost synonymous for Warnock. Personhood is a main characteristic of human species. Under normal circumstances all human beings will be able to manifest the qualities of personhood if their normal growth will not be interrupted by internal or external factors. Furthermore, she claims that expressing ethical preference for our own species is not

something immoral and unjust, as Harris argues, but something natural and even desirable.

The focus of Warnock's moral theory is individuality and not cognitive abilities. She argues that individuality starts fourteen days after conception. Like Thomas Shannon and Allan Wolter¹¹, she maintains the view that because the pre-embryo has the potential to divide into two or more monozygotic embryos that could, eventually, give rise to two or more individuals, it cannot count as a unique human being. Also, there is the view that up to that point there is very little collaboration between the cells in order to regulate and preserve an individual life.¹² Furthermore, at this point in development, the pre-embryo is constituted of a cluster of undifferentiated pluripotent cells. The differentiation process has not yet begun. It is only after approximately the fourteenth day that the primitive streak, which will later become the basis of the nervous system, makes its appearance. Only then one can be certain about the number of individual human beings that will result from this conceptus.

According to the theory of 'individualism', moral consideration can be directed only to an individual being. Therefore Warnock argues that only pre-fourteenth day embryos could be used for research. Since individuality is the defining factor of moral value, embryos that have passed the twinning stage and started developing as individual beings should be awarded full moral status equivalent to that attributed to healthy adult human beings. Warnock believes that every human individual being has the moral right to be protected and respected. Hence, it is morally right to use the pre-embryo for

¹¹ Shannon, Th. A., Wolter, A. B., 'Reflections on the Moral Status of the Pre-embryo', *Theological Studies*, vol. 45 (1), 1990, pp. 3-33.

¹² McMahan, J., *The Ethics of Killing: Problems at the Margins of Life*, New York: Oxford University Press, 2002; Smith, P., Brogaard, B., 'Sixteen Days', *Journal of Medicine and Philosophy*, vol. 28, 2003, pp. 45-78.

research but that becomes morally impermissible when the embryo passes the fourteenth-day stage.

Although Warnock and Harris disagree with each other on the moral status of the human embryo, they seem to agree on one thing; moral value is an all or nothing quality, at least when it comes to human beings. Both of them maintain that one can either have full moral value that makes him or her inviolable or no direct value at all, and both agree that the embryo at the stages of embryonic stem cell research has no moral status. This thesis argues a different case: the ethical worth is not a black-or-white condition. Especially when considering the moral status of human beings, it is important to differentiate between the 'intrinsic moral value' that can be attributed to all humans and 'full moral value' that is mainly an attribute of human persons.

In Chapter 4, consideration is given to the thought of H. Tristram Engelhardt Jr., who holds a Christian position. From its beginning, Christianity has displayed an interest in questions regarding health and healing. It was inevitable that Christian thinkers would preoccupy themselves with bioethical issues, especially when touching on issues of human life and death. One can note a spectrum of Christian responses to bioethical questions. At one end, there are those who were absorbed by secular bioethics and sought for fresh approaches to ethics.¹³ In the middle are others who try to find a middle ground

¹³ Fletcher, J. F., *Morals and Medicine*, Princeton, NJ: Princeton University Press, 1954; Rahner, K., 'The Problem of Genetic Manipulation', in *Theological Investigations* 9, New York: Herder and Herder, 1972, pp. 225-252; Shelp, E. E. (ed.), *Theology and Bioethics: Exploring the Foundations and Frontiers*, Dordrecht; Lancaster: Reidel, 1985; Shelp, E. E. (ed.), *Secular Bioethics in Theological Perspective*, Boston: Kluwer Academic Publishers, 1996; May, W. F., *Testing the medical covenant: active euthanasia and health care reform*, Grand Rapids, Mich.: Eerdmans, 1997; Beauchamp, T. L., Childress, J. F., *Principles of biomedical ethics*, 5th ed., Oxford: Oxford University Press, 2001; Ford, N., *The Prenatal Person: Ethics from Conception to Birth*, Oxford: Blackwell Publishing, 2002.

between their religious convictions and secular ethics.¹⁴ At the other end are writers who decide to support their dogma and argue from a traditional Christian position.¹⁵ Engelhardt is a special case. He belongs not to one but two of these categories. Engelhardt advocates a libertarian way of organising bioethics. As a member of the secular society, he mutes his religious beliefs and supports a secular bioethics. As a member of the Orthodox Church, he argues for a traditional Christian bioethics. This is not the only reason that makes Engelhardt's position stand out.

The majority of theological bioethicists believe that there is a place in the secular bioethics debate for theology. Those who belong to the first two categories choose to reinterpret and reshape the theological ideas before they introduce them into the secular bioethical world, and those in the third category choose to retain the metaphysical aspect of theology and to remain true to their doctrine. Yet, none of these groups questions the relevance and usefulness of theological ethical beliefs and ideas for secular bioethics. Engelhardt is almost unique in his position arguing that Christian ethical concepts are irrelevant to secular bioethics, for the reason that Christian ideas cannot survive outside a purely Christian environment. Since one of the major question this thesis is trying to

¹⁴ Grisez, G., *Abortion: the myths, the realities and the arguments*, New York: Corpus Books, 1970; Grisez, G., and Boyle, J. M., *Life and death with liberty and justice: a contribution to the euthanasia debate*, Notre Dame, Ind.: University of Notre Dame Press, 1979; McCormick, R. A., *How brave a new world?: dilemmas in bioethics*, London: SCM Press, 1981; Cole-Turner, R., *The New Genesis: Theology and the Genetic Revolution*, Louisville, KY: Westminster/John Knox, 1993; Peters, T., *Playing God? Genetic Determinism and Human Freedom*, New York; London: Routledge, 2003.

¹⁵ Ramsey, P., *Fabricated Man: The Ethics of Genetic Control*, New Haven, CT: Yale University Press, 1970; Ramsey, P., *The Patient as Person: Explorations in Medical Ethics*, New Haven, CT: Yale University Press, 1970; Curran, Ch. E., *Politics, medicine and Christian ethics: a dialogue with Paul Ramsey*, Philadelphia: Fortress Press, 1973; Curran, Ch. E., McCormick, R. A., *The distinctiveness of Christian ethics*, New York: Paulist Press, 1980; McCormick, R. A., *How Brave a New World: Dilemmas in Bioethics*, Washington, D.C.: Georgetown University Press, 1981; O'Donovan, O., *Begotten or Made?*, Oxford: Clarendon Press, 1984; Meilaender, G., *Bioethics: A Primer for Christians*, Grand Rapids, MI: Wm. B. Eerdmans, 1996; Gustafson, J. M., *Intersections: science, theology, and ethics*, Cleveland, Ohio: Pilgrim Press, 1996; Breck, J., *The Sacred Gift of Life: Orthodox Christianity and Bioethics*, Crestwood, NY: St. Vladimir's Seminary Press, 2000.

answer is whether Christian ideas can inform secular bioethics, a close and in depth examination of Engelhardt's distinctive position is necessary.

In order to understand both of his bioethical theories, I will ask the same five basic questions as I did for Warnock and Harris. For traditional Christianity the question of the moral status of the human embryo has a definite answer. Human beings are created by God according to God's Image and after God's Likeness and therefore, have absolute moral worth. Christians traditionally believe that this is a universal truth. However, Engelhardt believes that the absolute value of human life can only be defended inside the parameters of the Christian tradition but not within a secular context.

Engelhardt thinks that the only way for a contemporary society to operate smoothly, without impinging on citizen liberties, is by keeping these two incompatible moral theories separate. He therefore proposes a libertarian ethical system for the broader society where personhood is defined in utilitarian terms. His system follows the same personalism theory as that of Harris'. He argues that only persons have moral value and only they deserve to be respected and protected. Human embryos are not persons yet and they might never become persons. It is irrational under these circumstances, then, to award them with full moral status and give them the same treatment and consideration as healthy adult human beings. Adult human beings, present and future, are the only bearers of ethical rights. The health, safety and welfare of these people should be our priority and sole concern. Therefore, he concludes, there should not be an ethical reason that would stop scientists from creating, using and destroying human embryos.

Engelhardt, in addition to his libertarian ethical system, advocates a Christian position of holism based on Christian doctrines for those who already belong to the

Christian family, or for those who might decide to join it. According to Christian tradition, all instances of human life are morally valuable and should never be used or abused by others. Man is created by God as a body-mind whole. These aspects of human life are distinguishable but inseparable.

Christian religion always supported and encouraged the medical profession. Helping fellow humans, delivering them from degenerative and fatal diseases and restoring their health has always been celebrated within the Christian Church. However, Christianity is first and foremost concerned with the spiritual health of persons. Using other human beings to achieve our own goals and help ourselves is a sinful act that leaves its marks upon one's soul. People should avoid sinful acts; accepting bodily death, when cure is impossible, is much better than risking moral and spiritual suicide.

However, Engelhardt believes that only a secular ethical theory, similar to the one proposed by Harris can be adopted by a contemporary society and that Christian ideas cannot or should not enter the public domain. I would like to argue that an anthropology based on a Christian understanding of the person could work as a basis for an ethical system which could also be adopted by a non-Christian society.

In Chapter 5, I present a holistic understanding of the human person. Holism is the idea that a system cannot be determined or explained by reduction to its fundamental parts, or in other words, that a whole is more than the sum of its parts. In anthropology holism refers to the theory that human beings are not just physical or spiritual entities but they are a unity of psychophysical capacities, they are psychosomatic unities. By psychosomatic unity, I mean that a human being is a whole, a unity of physical, mental and spiritual faculties. These different facets of human life are distinguishable but not

separable. A precise definition of the terms 'mind', 'spirit' or 'soul' is very difficult. It is very common in the philosophical and psychological literature for the terms 'mind' and 'soul' to be used interchangeably to denote the cognitive, mental and emotional aspects of human life: 'The mind or soul ... has three parts namely, Thought, Feeling and Will, or more solemnly, the Mind or Soul functions in three irreducibly different modes, the Cognitive Mode, the Emotional Mode, and the Conative Mode.'¹⁶ The terms 'spirit' and 'soul' are, also, commonly treated as synonyms. These terms have a metaphysical connotation and therefore, are more often used in theological and religious texts to denote also the spiritual aspect of human life. In the Christian tradition they are most often understood as the mean by which God and man, Creator and creature communicate with each other. It is not clear in theological writings that the 'spirit' or 'soul' is a distinctively different and distinguishable aspect of human life from that of the 'mind'. The 'soul' or 'spirit' most of the time seems to have exactly the same 'function' as the mind does. Origen, for example, in his *On first Principles* equates the mind with the soul, whereas Gregory of Nyssa in his *On the making of Man* equates the mind with the spiritual aspect of man.

In this thesis I will understand the concept of 'mind' to refer to the mental faculty of the man, that is, the cognitive and emotional phenomena such as awareness, thought, volition, feeling and memory, and to the spiritual aspect of human life. The term 'soul' will be understood as a mainly religious term referring to the spiritual capacity of man to relate and communicate with God. The term 'spirit' will be understood as a term with no particular religious connotations that denotes the psychological and spiritual faculties of

¹⁶ Ryle, Gilbert, *The Concept of Mind*, Harmondsworth: Penguin, 2000, p. 61.

man. I am going to refer to the concept of psychosomatic unity as a unity of ‘mind’ (mental and spiritual) and ‘body’ (physical).

Holistic anthropology theory is not a new concept. It stems from the traditional Judeo-Christian understanding of the person and has been vigorously supported by theologians and biblical scholars like Thomas Aquinas¹⁷, St Gregory of Nyssa¹⁸ and John Zizioulas¹⁹.

The Bible describes the human person as a whole and not as a cluster of individual parts. The holistic understanding of the person has been argued by many theological and biblical scholars such as Karl Barth²⁰ and Gerhard von Rad²¹, and is in tandem with the Judaic philosophy. Dualism penetrated Christian thinking through Ancient Greek and mainly Platonic philosophy. In addition, the Old Testament describes man as a unity of body and mind, flesh and soul. All of these aspects put together constitute the whole person. None of them can exist separately in human nature. God created man as a whole. The Apostle Paul, who for many is the ‘founder’ of Christian religion, affirmed in his letters the holistic understanding of the human person. He distinguished between flesh and body and he perceived that the mind could become ‘carnal’, and the body could become ‘spiritual’.

However, holism is not a concept that solely exists in Christian tradition. Holism can also be found within the discipline of biology and systems theory. I will indicate how this concept is used and advanced in this scientific field. Systems biology theory argues

¹⁷ Aquinas, Th., *Summa Theologica*, translated by the fathers of the English Dominica Province, Westminster, Md: Christian Classics, 1981.

¹⁸ Gregory of Nyssa, ‘On the Making of Man’, in Philip Schaff and Henry Wace (eds.), *Nicene and Post-Nicene Fathers*, Series II, vol. 5, Peabody, MA: Hendrickson Publishers, 1994.

¹⁹ Zizioulas, J., *Being as Communion: Studies in Personhood and the Church*, Crestwood, NY: St Vladimir’s Seminary Press, 1997.

²⁰ Barth, K., *Church Dogmatics*, trans. G. W. Bromley, Edinburgh: T&T Clark, 1975.

²¹ Von Rad, G., *Old Testament Theology*, trans. D. M. G. Stalker, Edinburgh: Oliver and Boyd, 1962-1965.

that a system is more than the sum of its parts. The human organism is a dynamic holistic system constituted from different parts, physical, mental and spiritual. These different parts are in constant collaboration and exchange with each other and cause the system to change and evolve. System biology theory argues that a holistic approach of enquiry when considering dynamic systems whether it is in the area of quantum mechanics, chaos theory or in philosophical anthropology could produce more accurate results.

Medicine is also an area in which holism is a popular concept. In Chapter 5, I will show how the idea of understanding human life in psychosomatic terms is applied in the everyday practice of medicine, psychology and psychiatry. Holistic medicine is a branch of medicine that perceives the patient as a psychosomatic unity and focuses not only on physical manifestations of a disease but also on the mental and spiritual aspects of it. East Asian medicine is a practice clearly holistic in its nature that has become increasingly popular in the West and its healing methods have been recognised and accepted by western practitioners. Psychiatric medicine and psychology also recognise that emotional and spiritual factors play an important role for the treatment of patients. By examining holism in areas outside the Christian tradition, I will confirm that this theory need not be considered only as a by-product of Christian doctrinal teaching but as a general theory that reflects reality and can be used as an alternative to other more popular secular anthropological theories.

In Chapter 6, I focus on the evaluation of the three theories presented: 'personalism' as presented by John Harris and Tristram Engelhardt for the secular society; 'individualism' as offered by Mary Warnock, and finally 'holism'. Also, the concept of intrinsic moral value in relation to the concept of intrinsic nature will be

discussed in depth. It will be evinced that intrinsic value depends on the intrinsic nature of beings, and that there is a marked difference between the notions of 'full moral status' and 'intrinsic moral value', making clear that this distinction is paramount when considering the question of the moral status of the human embryo.

First the theory of personalism will be examined. The main point of this theory is the moral distinction between human beings and human persons. Personhood and not humanhood is what is morally important. Personalism maintains that we are fundamentally persons and therefore only human persons can have full moral value. Harris and the 'secular' Engelhardt follow a Lockean understanding of a person. Moral value is dependent on a cluster of cognitive abilities, which also depend on the existence of a full functioning, highly developed and healthy brain. Brain is the basis of personal existence for both Harris and "the secular" Engelhardt. From there they conclude that beings not in possession of complex and functioning brains cannot be regarded as independent moral entities and therefore cannot be awarded with moral value. Arguing that we are fundamentally persons can be a philosophically problematic position. Although it is a theory that coheres with the general intuition that 'we go where our brain goes' and it offers a good justification to why we only consider persons to be moral agents, as we will see, it still hinders on a number of philosophical problems. Additionally, Harris and Engelhardt's personalist theory fail to distinguish between "full moral value" and "intrinsic moral value", but they see moral worth as an all-or-nothing quality. Therefore, this theory could lead to a number of controversial and counter-intuitive ethical practices like infanticide, organ-harvesting from people in persistent vegetative state (PVS), use of severely mentally handicapped people for experiments, etc.

Then we will turn our attention to individualism. Individualism regards only human individuals as morally valuable. It argues that human embryos do not have the necessary organisation level to be regarded as individuals and for that reason cannot have any moral worth. Animalism, the theory that argues that we are fundamentally human animals, sits close with individualism. This theory, as presented by Eric Olson²² and David DeGrazia²³, supports the biological view. According to this theory, we are fundamentally biological organisms and not persons. Personhood is just a quality that could potentially emerge from the physical. Nevertheless, and besides the fact that they support the biological view, DeGrazia and Olson agree that the human pre-embryo should not count as an individual human organism because it can divide into two embryos and it lacks adequate organisation between its parts; this is also known as ‘the argument from indivisibility’.

However, developmental embryology suggests that there is enough organization in the early embryo to make it a distinct organism. Hence, the individualism view does not hold scientifically. Furthermore, there is a conceptual fallacy to this argument. As Christian Munthe²⁴ notes indivisibility should not act as a morally relevant factor when discussing the moral status of a particular being. What is morally important is not whether we are going to have one or two beings by the end of the divisibility process, but whether this or these beings deserve moral respect. Even if divisibility was a property of adult human beings, the two resulting adults after the process of division would still have full moral status.

²² Olson, E., *The Human Animal: Personal Identity without Psychology*, New York, Oxford: Oxford University Press, 1999.

²³ DeGrazia, D. *Human Identity and Bioethics*, Cambridge: Cambridge University Press, 2005.

²⁴ Munthe, Ch., ‘Divisibility and the Moral Status of Embryos’, *Bioethics*, vol. 15 (5/6), 2001, pp. 382-397.

The third theory examined in this thesis is the theory of holism. According to holistic anthropology, human beings are fundamentally psychosomatic unities. This view originates from the traditional Judeo-Christian philosophy and within the Christian religion is directly linked to the doctrine of divine creation and *Imago Dei*. For that reason life, and human life in particular, has always been considered to be morally valuable for the Christians. This is also the anthropological theory Engelhardt adopts, as a Christian himself, and for his moral friends. In Chapter 5, we will see how this theory can successfully be argued for outside the Christian tradition. Holism indicates that human beings are dynamic systems of body-mind collaboration. This is the fundamental, intrinsic nature of human beings, and consequently of human embryos. Although this theory offers a complete and comprehensive account of the fundamental nature of human life, it does not morally equate human embryos and adult human persons.

Human embryos do not have the same capacities as healthy adult human beings. Therefore, attributing full moral value to them may be problematic. Yet, this does not mean that human embryos are completely valueless. As I will argue, human embryos possess intrinsic moral value which renders them morally valuable and worthy of respect. Intrinsic value is a concept that has traditionally occupied a central role in ethics. Ancient Greek philosophers were particularly preoccupied with the idea of intrinsic value. This old concept saw a renaissance in moral philosophy in the last 100 years. Intrinsic value is the type of value a thing has “in itself”, “in its own right” or “for its own sake”. I will use G. E. Moore’s definition of intrinsic value. He defines intrinsic value as the type of value a thing has in virtue of its intrinsic and fundamental nature.²⁵ Intrinsic moral value is the

²⁵ Moore, G. E., ‘The Conception of Intrinsic Value’, in James Rachels (ed.) *Ethical Theory 1: The Question of Objectivity*, Oxford: Oxford University Press, 1998, pp. 28-42.

kind of non-derivative value that a being has in itself, in virtue of its intrinsic nature. Consequently, having a complete and comprehensive view of human nature is essential when trying to establish the moral value of the human embryo. In comparison with the two previous theories, holism appears to be the preferable one. Science, philosophy, as well as everyday human experience seem to support holism, I shall argue. It agrees with most people's intuition regarding human life and human embryos, as well as with scientific evidence regarding human development.

Having established the intrinsic moral value for the human embryo, I will return in Chapter 7 to the primary bioethical questions of this thesis. The issues that I will attempt to answer under the prism of this alternative view are the following: Is it ethically correct to create and use human embryos for research purposes? Given that there are alternative sources of stem cells, should we first utilise those sources, before we proceed with the creation of human embryos? How can we balance our duty to find new therapies for conditions that kill hundreds of people every day, against our moral responsibility to respect human embryos?

The holistic anthropological theory recognises an intrinsic moral value in human embryos. Their value should be recognised, respected and protected. Seeing them as mere matter that can be used, destroyed and discarded like any other inanimate matter, is morally wrong. On the other hand, this theory does not argue for treating embryonic life as sacrosanct. Intrinsic moral value does not translate into inviolability. This means that even though we have the moral obligation to respect the moral value of the life of the embryos, there may be cases where killing an embryo might be necessary.

I will argue that killing and respect are not always two mutually exclusive notions. I will give examples of cases where killing can be seen as an affirmation, and not a refutation of the value of human life. I present some examples from common medical practices that result in the killing of a foetus or a neonate, such as multifoetal reduction, which is performed by doctors in cases of multiple births, late-term abortion by craniotomy when the life of the mother is at stake, and separation of conjoint twins in cases when both cannot survive. I will talk about the cases of parents who decide to 'kill' their anencephalic children in order to donate their organs and give the chance to other infants to live. This is a purely altruistic action that, as the parents themselves admit, gives meaning to the very short life of their child.

The next example is that of voluntary active euthanasia. Active euthanasia is an ethically controversial issue in itself. However, people who support this practice see voluntary active euthanasia as an act of mercy and recognition of the value of human life. This is only when avenues of palliative care have been exhausted and continuing someone's life means letting this person suffer excruciating pain without any chance of comfort till the end of his or her life.

Lastly, I present the example of defensive war. Throughout history many countries have found themselves in the unfortunate situation of having to defend their borders from invading enemies. In such situations, governments first exhaust all the possible diplomatic routes and leave war as the last resort. However, when war seems unavoidable, then they are prepared to send young people to fight and die for their country. However, those Governments' decision to send young soldiers to fight, even

against a very powerful opponent, does not mean that they consider soldiers to be disposable material and their lives valueless.

Respectful treatment might not exclude killing under certain circumstances, but it nevertheless demands that embryos should not be used and destroyed in a cavalier manner. I will argue, therefore, that it is disrespectful and immoral to create human embryos for the sole purpose of using and destroying them for research when there are other alternatives available. Biotechnologists should first utilise all the other sources of stem cells - e.g. adult stem cells, foetal stem cells, stem cells from donated spare IVF embryos, cybrids and iPS cells - and refrain from acting disdainfully towards human embryonic life. Some of the alternative options are ethically uncontroversial and some others carry a level of ethical risk. Scientists involved in stem cell research should always try to choose the most efficient and the most morally unambiguous option.

The conclusion will offer a summary of the overall argument and focus on its two main points. The first point is the view that human embryonic life is valuable. The second point is that Christian ideas could play a significant role into the secular biomedical debate and propose alternative ways for considering the issue of the moral value of human life using secular philosophical and scientific criteria and not dogmatic teaching. I will summarise the reasons that make a holistic understanding of human nature a better model on which to base our ethical decisions regarding embryonic stem cell research and I will recapitulate the implications of it on the current debate regarding the destruction of human embryos for research.

Chapter 2

An Overview of Stem Cell Research

Introduction

The history of stem cell research begins in the mid 19th century. The invention of the microscope opened a new world for the biological scientists who discovered that stem cells can propagate and differentiate themselves. They recognized that stem cells are the building blocks of organisms, capable of giving rise to all other cells. It was in early 1900 when researchers realized that many different types of blood cells (e.g. white blood cells, red blood cells, and platelets) emerge/grow from the same stem cell. This came as a revelation to the scientific world, but it took almost 50 years of ongoing research in this area of biotechnology before scientists understood the basic function of stem cells. Even though bone marrow transplant –actually a transplant of adult stem cells- had already been used in patients with anaemia and leukaemia who were receiving chemotherapy and

radiation, it was only in 1963 that the Canadian researchers Ernest A. McCulloch and James E. Till managed to discover and describe the self-renewing activities of transplanted mouse bone marrow cells.

This area of biotechnology became the focus of vigorous research activity and in the 1980s and 1990s scientists found ways to target and alter the genetic material of stem cells, as well as develop new methods of growing human stem cells in the laboratory. These advances opened the way to human stem cell research. A major breakthrough in human stem cell research occurred in 1998 with the work of a scientist at the University of Wisconsin called James Thomson.¹ He was the first to successfully isolate stem cells from the inner cell mass of spare early embryos taken from fertility clinics and grow them in the laboratory. He established the world's first human embryonic stem cell line, which still exists. Earlier that year, a scientist from the John Hopkins University, John Gearhart, managed to derive germ cells from cells in foetal gonadal tissue (primordial germ cells).²

After Thomson's discovery, a number of biologists and biotechnologists focused their scientific investigations on stem cells. They established that stem cells have the ability to differentiate into any of the specialized cells in the body and for this reason could be used as replacement cells for tissue and organs such as heart, liver, pancreas, and for the nervous system. Nowadays, stem cell research is one of the most important and rapidly advancing areas of biotechnological research, with over 2000 research papers on embryonic and adult stem cells being published in major scientific journals every year.

¹ Thomson J. A., Itskovits-Eldor J., Shapiro, S. S. et al, 'Embryonic Stem Cell Lines derived from Human Blastocysts', *Science*, vol. 282, 1998, pp. 1145-1147.

² Shamblott, M. J., Axelman, J., Wang, S., Bugg, E. M., Littlefield, J. W., Donovan, P. J., Blumenthal, P. D., Huggins, G. R., Gearhart, J. D., 'Derivation of pluripotent stem cells from cultures human primordial germ cells', *Proceeding of the National Academy of Sciences U. S. A.*, vol. 95, 1998, pp. 13726-13731.

Many scientists around the world are pushing for permission to progress to the next level of research with human embryonic stem cells, that of clinical trials, and are competing with each other to be the first to break this threshold. No such trial has been performed so far. However, the use of adult stem cells is already being established in medicine, and adult stem cells are being used by many scientists around the world in treatment of over a hundred of different conditions including leukaemia, Hunter's syndrome and heart disease.

Yet, regardless of the good news coming from the adult stem cell sector, many scientists still insist that research on embryonic stem cells is of paramount importance for the future of the research. Adult stem cells, they argue, are not versatile and cannot differentiate into any type of body cell with the same efficiency as embryonic stem cells do. Also, embryonic stem cells have the ability to proliferate ad infinitum and give rise to large numbers of identical cells in cultures. This is quite important for the future of stem cell therapy as large numbers of stem cells are required for stem cell replacement therapies. Scientists have not yet found the way to make adult stem cell multiply as efficiently as embryonic stem cells do³, but have recently discovered a way to turn adult somatic cells into embryonic stem cell-like cells. Induced pluripotent stem cells (iPS cells) as they are called, are believed to have all the properties and potentials of embryonic stem cells, such as expression of certain cell genes and proteins, chromatin methylation patterns, doubling time, potency and differentiability. Yet, whether they could successfully and completely replace the use of embryonic stem cells in research is still being assessed.

³ 'Stem Cell Basics: What are the similarities and differences between embryonic and adult stem cells?', in *Stem Cell Information*, Bethesda, MD: National Institutes of Health, U.S. Department of Health Services, 2006, viewed on 12/03/08, <http://stemcells.nih.gov/info/basics/basics5.asp>.

However, human embryonic stem cell research is hindered by moral as well as technical problems. Right from its inception in 1997, when the prospect of human cloning for reproductive and therapeutic purposes became more apparent, there were many thinkers who feared that embryonic stem cell research could lead to the cruel exploitation of human embryos. Even though some of their early objections no longer seem to be valid (e.g. that cloned children will lack individuality), the core of their concern, which is respect for human life, has remained a major consideration in the field of bioethics. This means that the objections were not just an expression of mere ludditism, but were founded on deep philosophical and ethical concerns. Ten years later and the question of the moral status of the human embryo is yet to be answered. Many theories have been proposed that attempt to solve this problem. Some suggest that human embryos have no intrinsic moral status at all and their value can only be instrumental. Others believe that there is some sort of intermediate status that can be accorded to human embryos. However, the level of their status is not so high in order to justify non-use but just high enough to validate meaningful use. The third main category is that of thinkers who believe that human embryos are human persons with full moral status and strong intrinsic value. According to this belief, human embryos should never be used as means to other people's ends. Hence, research that entails the deliberate creation and destruction of human embryos is morally wrong and should be prohibited. Due to the ethical controversy that surrounds this type of research, though, scientists have been forced to discover new, less ethically questionable ways to derive pluripotent stem cells for their experiments; ways that did not involve the destruction of human embryos. Such techniques, for example, are the creation of iPS cells and cytoplasmic hybrids (cybrids).⁴

⁴ It is not clear whether cybrids should be considered human or not. The issue will be discussed further in

The problem of human personhood is a notoriously difficult problem. There are many different ethical theories that represent different belief systems and different world views. Each one of them can argue for the validity of its case and offer rational arguments to support its stance. However, it is very difficult for someone to move from one belief system to the other. Deep critical thinking, open-mindedness, as well as cautious and long-term investigation is needed for someone to change his or her basic beliefs. Today the world is divided in countries that favour and exercise embryonic stem cell research and in those that argue against it. On the 24th of July 2006 the EU research ministers met in Brussels under the Finnish Presidency to discuss and reach an agreement on the Seventh Research Framework program for research and technological development from 2007 until 2013, regarding human embryonic stem cell research and nuclear transfer research. The council discussions focused on funding for research involving human embryonic stem cells. Germany, Austria, Italy, Lithuania, Luxembourg, Malta, Poland and Slovakia though, raised strong objections against any research done on human embryos. Their objection for using human embryos for research purposes was mainly based on ethical differences, as these countries have attested to the human dignity of embryos and the protection thereof against destruction.⁵ On the other hand, countries such as the UK and Sweden do not hold to the same principle. Finally, and after deciding that no funding would be granted by the EU to research that destroys the human embryo, the Germany-led coalition changed its position making an agreement possible. The EU

Chapter 7 of this thesis.

⁵ European Commission, *Survey on Opinions from National Ethics Committees or similar bodies, Public Debate and National Legislation in Relation to Human Embryonic Stem Cell Research and Use in EU Member States*, 2004; Johnson, B., 'EU agrees funding deal on stem cell research', The Parliament.Com, 25 July 2007, viewed on 14 July 2007, <http://www.theparliament.com/latestnews/news-article/newsarticle/eu-agrees-funding-deal-on-stem-cell-research/>;

would not fund the procurement of embryonic stem cells that results in the death of the embryos but it would finance the subsequent steps to make use of the cells.⁶ Although a consensus was met among the countries-members, the great diversity of opinions regarding the moral status of the human embryo became apparent once more.

Stem Cells

Stem Cells are undifferentiated cells found in all multi-cellular organisms and have the ability to develop through mitotic cell division into any type of body cell with more specialized functions such as muscle cells, heart cells, blood cells or brain cells.⁷ Stem cells are regarded the building block of an organism.⁸ They differ from the other cells found in the body in that: (i) they are unspecialized and they have not yet developed into cells that perform a particular function; (ii) they have the ability to self-renew and proliferate for long periods, and; (iii) they have the ability to differentiate and give rise to specialized cells.⁹ The ability to become one of several different kinds of specialised cell is called potency. Stem cells can have different levels of potency: (i) totipotent stem cells are stem cells that can differentiate into embryonic and extraembryonic cell types and can

⁶ *European Union 7th Research Framework Programmes*, 2006, Council of the European Union, Brussels, 24 July.

⁷ *Stem Cell Information*, The National Institutes of Health, available at, <http://stemcells.nih.gov/info/basics/>

⁸ Nill, K. R., *Glossary of Biotechnology Terms*, 3rd ed., Boca Ratons, Fla.; London: CRC Press, 2002.

⁹ *Stem Cell Information*, The National Institutes of Health, available at, <http://stemcells.nih.gov/info/basics/>

develop into a complete, viable organism, including the placenta. Totipotent are the cells that comprise the embryo after the first few divisions (morula); (ii) pluripotent cells are stem cells that can differentiate into any type of cell found in an organism but cannot develop into a complete organism, that is, cannot also form the placenta. Pluripotent stem cells are the cells found in the inner mass of a blastocyst; (iii) multipotent stem cells are stem cells that can differentiate into a number of cell types but not to all cell types. Stem cells found in post-birth organism normally belong to this category. Sometimes, the term pluripotent is used interchangeably with the term embryonic; I will adopt the 'term pluripotent'.

Stem cells are what allow the body to replace and/or repair damaged cells and tissue. Biomedical scientists want to use these unique abilities of stem cells in research and therapy, with the hope of finding cures for life-threatening and debilitating conditions such as Parkinson's disease, leukaemia, Alzheimer's disease and others.

There are four main types of stem cells: (i) embryonic stem cells that can be derived from the blastocyst; (ii) foetal stem cells that can be found in the blood of the umbilical cord and the placenta of a foetus; (iii) embryonic germ cells that can be obtained from primordial germ cells, and; (iv) adult stem cells that can be found in post-birth organisms.

These four types are described in more detail below:

i. Embryonic Stem Cells

Embryonic stem cells are derived from embryos that develop from *in vitro* fertilized eggs. Embryos are allowed to grow for four or five days, until they grow into a small ball comprising approximately 250 cells called the blastocyst. The blastocyst includes three structures: the trophoblast, which is the layer of cells that surrounds the blastocyst; the blastocoel, which is the hollow cavity inside the blastocyst; and the inner cell mass, which is a small group of 50 undifferentiated cells at one end of the blastocoel that will grow to become the foetus.¹⁰ These 50 cells are pluripotent and can change into any type of more specialized cell that exists in the body. Embryonic stem cells, if kept in culture, can continue self-replicating *ad infinitum* producing identical daughter cells. Scientists believe that due to the particular properties that stem cells have, they could potentially be used for various replacement therapies for neurodegenerative disorders, heart diseases, severe burns and others.

Scientists recently proved that embryonic stem cell can also be derived from *in vitro* fertilized embryos (IVF) undergoing pre-implantation genetic diagnosis (PGD). It is quite common IVF embryos to be screened for a number of genetic defects and mutations before they are implanted into the uterus. The embryo is allowed to develop for three to five days before a single cell is removed from it. Using a technique called the polymerase chain reaction the genetic material of this single cell is amplified sufficiently to test for genetic disorders. In 2006 Klimanaskaya et al. published a paper in *Nature* where they announced that they managed to derive embryonic stem cells from a single blastomere

¹⁰ *Stem Cell Information*, The National Institutes of Health, available at, <http://stemcells.nih.gov/info/basics/>.

extracted from embryos using PGD technique. They found that 'by growing the single blastomere overnight, the resulting cells could be used for both genetic testing and stem cell derivation without affecting the clinical outcome of the procedure.'¹¹ This finding opens up a new possibility of harvesting embryonic stem cell from embryos without necessarily destroying them.¹²

Embryonic stem cells could potentially be produced by using somatic cell nuclear transfer technique (SCNT), or therapeutic cloning.¹³ This is the same method that was used in 1996 to create Dolly, the first cloned sheep.¹⁴ The nucleus is removed from a somatic cell of the patient and implanted into a de-nucleated oocyte. An electric pulse is given which enables fusion, following which the process of mitosis starts. After a few days an embryo with DNA almost identical to that of the patient will develop. Stem cells derived from this embryo to be used for therapy will be perfectly compatible with those of the patient.¹⁵ This means that the possibility for transplant rejection and the need to use immunosuppressive drugs after the treatment could almost be eradicated. This technique has not yet been achieved, at least to a level to be useful, and also, is not legal in all

¹¹ Klimanskaya, I., et al, 'Human embryonic stem cell lines derived from single blastomeres', *Nature*, vol. 444, 2006, pp. 481-485 (481). Also see: Chung Y., I. Klimanskaya et al., 'Embryonic and extraembryonic stem cell lines derived from single mouse blastomeres', *Nature*, vol. 439, 2006, pp. 216-219; Chung Y, Klimanskaya, I. et al, 'Human Embryonic Stem Cell Lines Generated without Embryo Destruction' *Cell Stem Cell*, vol. 2, Feb. 2008, pp. 113-117.

¹² It is important to note that the method used to perform PGD and extract stem cells from a single blastomere is not that of twinning. No new embryo is created in the process.

¹³ The term 'therapeutic' in this case is a misnomer for the following reasons: (i) the subject involved in the research, i.e. the cloned embryo, does benefit from it; (ii) so far no therapeutic applications have emerged from this particular type of research; and (iii) it is not certain that therapeutic applications will ever emerge from this particular type of research.

¹⁴ Wilmut, I., Schneike, A. E., McWhir, J., Kind, A. J. and Campbell, K. H. S., 'Viable offspring derived from foetal and adult mammalian cells', *Nature*, vol. 385, 1997, pp. 10-13.

¹⁵ 'Cloning Issues in Reproduction, Science, and Medicine: A Report by a Joint Working Group of the UK Human Genetics Advisory Commission and the UK Fertilization and Embryology Authority', in A. J. Klotzko (ed.), *The Cloning Sourcebook*, Oxford: Oxford University Press, 2001, pp. 293-316.

countries.¹⁶ To counter the problem of compatibility and legality, scientists are trying to create stem cell banks where stem cells and tissue of many different types will be kept. Cells that most closely match the type of the patient will be used for transplant, minimizing the risk for transplant rejection.

The somatic cell nuclear transfer method was first used on amphibians, half a century ago. In 1952 Drs. Robert Briggs and Thomas J. King¹⁷ from the Institute for Cancer Research in Philadelphia replaced the nuclei of freshly fertilized egg cells of the leopard frog *Rana pipiens* with nuclei from blastula cells. They managed to produce a clone of free-swimming embryos (tadpoles) that had the same genetic endowments as the tissue cell donor. In 1956 embryonic clones were produced by using embryonic tissue older than the blastula stage. In 1961 J. B. Gurdon,¹⁸ a zoologist at Oxford, cloned toads from the South African clawed toad *Xenopus laevis* proving that there was no loss of genetic material as differentiation occurred. In the 1970s and 1980s the nuclear transfer method progressed into the use of mammals¹⁹, and led to the creation of the first mammal cloned from an adult cell nucleus in 1996.

In February of 1997, Ian Wilmut from the Roslin Institute in Edinburgh reported in the science journal *Nature* the birth of the first cloned sheep named “Dolly”.²⁰ The birth of Dolly the sheep was a breakthrough in the science of biotechnology. It was the first living example of mammalian cloning by transfer of genomic DNA. This

¹⁶ See *Hinxton Group: An International Consortium on Stem Cells, Ethics and Law* website for a detailed list of all the countries and their different policies regarding stem cell research. Available at, <http://www.hinxtongroup.org/wp.html>

¹⁷ Briggs, R. and King, T. J., ‘Transplantation of living nuclei from blastula cells into enucleated frogs’ eggs’, *Proceedings of the National Academy of Sciences USA*, vol. 38, 1952, pp. 455-463.

¹⁸ Gurdon, J. B., ‘The developmental capacity of nuclei taken from differentiating endoderm of cells of *Xenopus laevis*’, *Journal of Embryology and Experimental Morphology*, vol. 8, 1960, pp. 505-526.

¹⁹ Bromhall, J. D., ‘Nuclear transplantation in the rabbit egg’, *Nature*, vol. 258 (5537), 1975, pp. 719-722; Willadsen, S. M., ‘Nuclear transplantation in sheep embryos’, *Nature*, vol. 320, 1986, pp. 63-63.

²⁰ Wilmut, ‘Viable offspring derived from foetal and adult mammalian cells’.

demonstrated that the nuclear material of an adult cell can be ‘reprogrammed’ and that a mature mammalian cell has the capacity to regain totipotency. Cloned calves followed²¹ as well as cloned mice, rabbits, goats, pigs and Rhesus monkeys.²² It was the creation of Dolly that made the dream of human cloning a possibility. Soon after that, the proponents of human cloning started making claims through the media²³, advertisements on the Internet²⁴ and public forums²⁵ that human cloning is closer than we think.²⁶

In 1998 a new report on the successful isolation of human stem cells provided a new twist in the cloning debate.²⁷ Cloning could now be used for therapeutic as well as reproductive applications. The same year a biotechnology company in Massachusetts USA claimed that they created a human-cow hybrid cell using SCNT technique. The news were received with great scepticism, and yet served as a reminder that embryonic stem cells could also be derived from cloned embryos.²⁸ A number of scientific teams around the world threw themselves into the race to create the first human clone. In

²¹ Cibelli, J. B., Stice, S. L., Golueke, P. J., Kane, J. J., Jerry, J., Blackwell, C., Ponce de Leon, F. A. and Robl, J. M., ‘Cloned transgenic calves produced from nonquiescent fetal fibroblasts’, *Science*, vol. 280, 1998, pp. 1256-1258.

²² DiBerardino, M. A., *Genomic potential of differentiated cells* (New York: Columbia University Press, 1997); Meng, L., Ely, J. J., Stouffer, R. L. and Wolf, D. P., ‘Rhesus monkeys produced by nuclear transfer’, *Biological Reproduction*, vol. 57, 1997, pp. 454-459; McKinnel, R. G., and DiBerardino, M. A., ‘The biology of cloning: History and rationale’, *BioScience*, vol. 49, 1999, pp. 875-885; Wolf, D. P., Meng, L., Ouhibi, N., and Zelinski-Wooten, M., ‘Nuclear transfer in Rhesus monkey: practical and basic implications’, *Biological Reproduction*, vol. 60, 1999, pp. 199-204; Pennisi, G. B. and Vogel, G., ‘Clones: A hard act to follow’, *Science*, vol. 288, 2000, pp. 1722-1727; Ouhibi, N., Zelinski-Woolen, M. B., Thomson, J. A. and Wolf, D. P., ‘Assisted fertilization and nuclear transfer in nonhuman primates’, in D. P. Wolf, and M. Zelinski-Wooten, (eds.), *Assisted fertilization and nuclear transfer in mammals* (New Jersey: Humana Press Totowa, 2001), pp. 253-284.

²³ Onion, A. ‘Researchers Defend Plans to Clone People’, 2001, ABC News Online, viewed on 7/11/2003 <http://more.abcnews.go.com/senctions/scitech/Daily/News/cloninghearing010807.html>.

²⁴ Clonaid: The First Human Cloning Company. 2001 viewed on 7/11/2003, <http://www.clonaid.com>; The Human Cloning Foundations, viewed on 7/11/2003, <http://www.humancloning.org>.

²⁵ National Academy of Sciences: Scientific and Medical Aspects of Human Cloning, 2001 viewed on 7/11/2003, <http://www4.nationalacademies.org/pd/cosepup.nsf/web/HumanCloning>.

²⁶ Fiddler, M. B., Bayrak-Toydemir, P., and Pergament, E., ‘To clone or not to clone: Who will answer the question?’, *Differentiation*, vol. 69, 2002, pp. 182-183.

²⁷ Thomson, ‘Embryonic stem cell lines derived from human blastocysts’.

²⁸ Marshall, E., ‘Biotechnology: Claim of Human-Cow Embryo Greeted with Skepticism’, *Science*, vol. 282 (5391), 1998, pp. 1390-1391.

February 2004, Hwang Woo-Suk and his team from the Seoul National University in Korea announced that they successfully cloned 30 human embryos which managed to survive up to the one-week stage. The aim of Hwang's team was mainly SCNT cloning technique.²⁹ On the 19th May 2005 the same team claimed to have created eleven lines of human stem cells.³⁰ On the same day a team from the University of Newcastle also announced the creation of cloned human embryos, one of which grew in the laboratory for five days but, unlike the Korean team, they did not manage to extract stem cells.³¹ Things were looking very promising at the cloning field. In fewer than 10 years from the cloning of the first mammal using adult somatic cell, the cloning of humans had almost become a reality. Later that year a pattern of lies and fraud came to light about Hwang's claim success. He had not succeeded in creating human embryonic stem cell lines from cloned embryo; neither had he created eleven stem cell lines tailored to individual patients.³² The urge to be the first to create a human clone, his yearning for fame and public recognition and probably desire to attract more money for further research led him to announce these false claims.³³

²⁹ Hwang, W-S, Ryu, Y. J., Park, J. H., et al., 'Evidence of a pluripotent human embryonic stem cell line derived from a cloned blastocyst', *Science*, vol. 303, 2004, pp. 1669-1674. (Note: this article has been retracted; Kennedy, Donald, 'Retraction of Hwang *et al.*, *Science* 308 (5729) 1777-1783. Retraction of Hwang *et al.*, *Science* 303 (5664) 1669-1674', *Science*, vol. 311, 2006, p. 335).

³⁰ Hwang, W-S., Roh, S. I., Lee, B. C., et. Al., 'Patient-specific embryonic stem cells derived from human SCNT blastocysts', *Science*, vol. 308, 2005, pp. 1777-1783. (Note: this article has been retracted; Kennedy, Donald, 'Retraction of Hwang *et al.*, *Science* 308 (5729) 1777-1783. Retraction of Hwang *et al.*, *Science* 303 (5664) 1669-1674', *Science*, vol. 311, 2006, p. 335).

³¹ Stojkovic, M., et al., 'Derivation of a human blastocyst after heterologous nuclear transfer to donated oocytes', *Reproductive Biomedicine Online*, vol. 11 (2), 2005, pp. 226-231; 'Race to find new cures speeds up as Britain clones human embryo', *The Times* 20/5/05, viewed on 20/5/2005, <http://www.timesonline.co.uk/article/0,,2-1619958,00.html>.

³² 'Cloning pioneer did fake results, probe finds', *New Scientist* 23/12/05, viewed on 23/12/05, <http://www.newscientist.com/article.ns?id=dn8515>; 'Hwang faked all research on human stem cells', *New Scientist* 10/01/06, viewed on 12/01/06. <http://www.newscientist.com/article.ns?id=dn8557>.

³³ Saunders, R., Savulescu, J., 'Research ethics and lesson from Hawnggate: what can we learn from the Korean cloning fraud?' *Journal of Medical Ethics*, vol. 34, 2008, pp. 214-221.

In 2001 the United Nations General Assembly unanimously decided to begin negotiations on an international treaty regarding reproductive cloning. A division emerged between countries, such as Germany, that support a treaty that includes a ban on SCNT method, and countries that wanted the treaty to address only reproductive cloning. In November 2003 UN voted to allow two more years of research and consideration before any decision was made.³⁴ In March 2005 the UN abandoned the quest for global ban of human cloning and ended the negotiations with a declaration that condemns all forms of human cloning but is not legally binding.³⁵ The United Kingdom, USA, Belgium, Sweden, Iran, Israel, India, Singapore, China, Japan, South Korea, South Africa are a few of the countries where various stem cell derivation techniques including SCNT, are legally permissible.

Many practical barriers need to be overcome before stem cell therapy can become generally available. Successful cloning of a human embryo and derivation of embryonic stem cells has still not been performed. Although the Newcastle team managed to clone a human embryo that grew to the blastocyst stage, they failed to harvest stem cells from it. It will take many more years and numerous trials before such a technique can become a common place in medicine. Alison Murdoch, the head of the Newcastle team recognises a number of difficulties that may limit the medical application of human embryonic stem cells: '(a) continuous culture of hES [human embryonic stem] cells in an undifferentiated state requires the presence of feeder layers and animal-based ingredients which incurs a

³⁴ Biever, C., 'UN postpones global human cloning ban', *New Scientist*, 07/10/03 viewed on 07/10/03, <http://www.newscientist.com/article.ns?id=dn4359>.

³⁵ Biever, C., 'UN abandons legal ban on human cloning', *New Scientist*, 09/03/05 viewed on 09/03/05, <http://www.newscientist.com/article.ns?id=dn7120>.

risk of cross-transfer of pathogens³⁶; (b) hES cells demonstrate high genomic instability and non-predictable differentiation after long-term growth; and (c) differentiated hES cells express molecules which could cause immune rejection.³⁷ Other scientists, such as P. Mombaerts, stress the immense burden SCNT technique can put on women as well as the great financial cost of such a technique that will make it inaccessible to the majority of the world population.

‘Optimistically, ~100 human oocytes would be required to generate customized ntES cell [nuclear transfer embryonic stem cell] lines for a single individual. A crucial difference is that, although 100 mouse oocytes can be obtained from a few superovulated females at a cost of ~\$20, human oocytes must be harvested from superovulated volunteers, who are reimbursed for their participation. Add to this the complexity of the clinical procedure, and the cost of a human oocyte is ~\$1,000-2,000 in the U.S. Thus, to generate a set of customized ntES cell lines for an individual, the budget for the human oocyte material alone would be --\$100,000-200,000. This is a prohibitively high sum that will impede the widespread application of this technology in its present form [...] In the long run, efforts should be concentrated toward developing oocyte-independent systems.’³⁸

This means that creating tailor-made embryonic stem cells for each patient by using SCNT technique is not yet feasible.

Creating embryonic stem cells through *in vitro* fertilization (IVF) is also hindered by technical issues that render their use for therapeutic applications problematic. Embryonic stem cells that are kept in culture are likely to accumulate cancerous

³⁶ Although this problem has been, to a great extent, overcome (see note. 40) , the use of animal material is still necessary in human stem cell culture.

³⁷ Murdoch A., et al. ‘Derivation, growth and applications of human embryonic stem cell’, *Reproduction*, vol. 128, 2004, pp. 259-267.

³⁸ Mombaerts, P., ‘Therapeutic cloning in the mouse’, *100 Proceeding of the National Academy of Sciences*, September 30, 2003, pp. 119224-11925 (11925).

mutations overtime, which makes them unsuitable for transplantation.³⁹ Also, the fact that most laboratories use non-human 'feeder' cells to enable the growth of stem cells raises significant safety issues. A study conducted by the University of California in 2005 showed that stem cell lines where animal feeder cells were used as a growth medium had been contaminated with an animal molecule, which makes these cell lines unsuitable for clinical use.⁴⁰ Almost at the same time, another paper was published in the journal *Nature Methods* by a team from *WiCell Research Institute* announcing that they have found a method to grow human stem cells without the use of animal feeder cells.⁴¹ Although this new method significantly reduces the risk of contamination from animal pathogens, it does not eradicate it completely. The procedure is still reliant upon animal material in human stem cell culture, such as Matrigel, a plate-coating matrix of cells extracted from mouse tumours, and serum replacement, which is bovine in origin. All these are mainly technical difficulties that could be overcome through further research and experimentation.

However, human embryonic stem cell research has one more impediment, the solution to which is not straightforward. Ethical considerations regarding the use of human embryonic stem cells for research and potentially therapeutic purposes have polarized scientific and public opinion. Some believe that it is highly unethical to use and destroy human embryos in order to produce stem cells for research purposes. They believe that the human embryo has the same moral status and consequently the same

³⁹ Anirban M. et al., 'Genomic alterations in culture human embryonic stem cells', *Nature Genetics*, vol. 37 (10), 2005, pp. 1099-1103.

⁴⁰ Martin, J. M. et al., 'Human Embryonic Stem Cells express an immunogenic nonhuman sialic acid', *Nature Medicine*, vol. 11 (2), 2005, pp. 228-232.

⁴¹ Ren-He Xu, et al. 'Basic FGF and suppression of BMP signalling sustain undifferentiated proliferation of human ES cells', *Nature Methods*, vol. 2 (3), 2005, pp. 185-191.

rights as an adult human person. According to their view, using human embryos as research material degrades and insults human dignity. Also, some people - such as Peter Saunders⁴², Leon Kass⁴³, David Jones⁴⁴ Robert George and Alfonse Gomez-Lobo⁴⁵ - believe that stem cell research using cloned embryos will be the beginning of a slippery slope that would lead to reproductive cloning, a technique currently illegal to most countries around the world.

Conversely, there are those who believe that the continuation of embryonic stem cell research is of paramount importance for the prosperity and welfare of humanity and for this reason should be permissible. They do not accept that human embryos have the same moral value as human persons. In fact, some thinkers claim that human embryos have no moral value at all, and therefore using them as research material should not be considered unethical. They believe that claims for the moral significance of human embryonic life are based on false assumptions regarding human life such as the superiority of the human species or on questionable metaphysical beliefs. In either case, they hold that our moral obligation is to the existing and future persons who would be able to benefit from such research and its application, and not with non-conscious balls of human cells with disputable moral status and an uncertain future. Furthermore, they claim that 'slippery-slope' arguments cannot count as real concerns, since they can be easily

⁴² Saunders, P., 'Deadly Questions on the Status of the Embryo', *Nucleus*, July 1998, pp. 28-34.

⁴³ Kass, L., *Life, Liberty and the Defense of Dignity: The Challenge for Bioethics*, San Francisco: Encounter Books, 2004.

⁴⁴ Jones, D., 'A theologian's brief: On the place of the human embryo within the Christian tradition and the theological principle for evaluating its moral status', *Ethics and Medicine*, vol. 17 (3), 2001, 143-153.

⁴⁵ George, R., and Gomez-Lobo, A., 'The Moral Status of the Human Embryo', *Perspectives in Biology and Medicine*, vol. 48 (2), 2005, 201-210.

solved with the correct legislation. This view has been popularized by Peter Singer⁴⁶, John Harris⁴⁷, Robert Edwards⁴⁸ and Michael Lockwood⁴⁹.

ii. Foetal Stem Cells

Eight weeks after fertilization, the human embryo reaches the foetal stage. Foetal stem cells can be derived from the umbilical cord blood or the placenta of the foetus. Foetal stem cells can be collected after childbirth or can be isolated from aborted fetuses. By the eighth week of gestation, stem cells have already differentiated into specific cell types. However, some stem cells still retain their pluripotency and can be re-differentiated in the laboratory. Foetal stem cells have several advantages in comparison to embryonic and adult stem cells. First of all, they are very easy to obtain from aborted fetuses and miscarriages. Furthermore, it is much easier for researchers to take permission to use foetal stem cells for research as their use does not raise any ethical objections. Obtaining them does not require the killing of human embryos and hence, makes their use less morally controversial.

Foetal stem cells have already been used to treat up a number of different diseases.⁵⁰ Notwithstanding this apparent success, there is a serious drawback with using

⁴⁶ Singer, P., 'Sanctity of Life or Quality of Life?' *Paediatrics*, vol. 72 (1), 1983, pp. 128-9.

⁴⁷ Bortolotti, L., and Harris, L., 'Stem cell research, personhood and sentience', *Reproductive Biomedicine Online*, vol. 10, Suppl. 1, 2005, pp. 68-75.

⁴⁸ Edwards, R. G., 'The Current Clinical and Ethical Situation of Human Conception In Vitro', *Proceedings of the 19th Annual Symposium of the Eugenics Society*, 1983, p. 103.

⁴⁹ Lockwood, M., 'The Moral Status of the Human Embryo: implications for IVF', *Reproductive Biomedicine Online*, vol. 10, Suppl. 1, 2005, pp. 17-20.

⁵⁰ Barcelos, L. S., Duplaa, C., Kränker, N. et.al. 'Human CF133 progenitor cells promote the healing of diabetic ischemic ulcers by paracrine stimulation of angiogenesis and activation of Wnt signalling', *Circulation Research*, vol. 104, 2009, pp. 1095-1102; Sanders, J. E., 'Growth and development after

them in therapy. Foetal stem cells are impossible to use in patient-specific therapies. Therefore, the range of diseases and the number of patients they can treat is limited.⁵¹ Also, a recent survey revealed that pre-cancerous cells can be found in neonates. Nowadays parents have the option to store their children's foetal stem cells to use as a 'repair kit' in the future. Yet, the presence of pre-cancerous cells in neonates means that a future use of these cells could instead of cure, result in the affliction of the patient with cancer, such as leukaemia. The risk of attracting cancer through the use of foetal stem cells raises new problems that need to be resolved before foetal stem cells could be used widely for therapy.⁵²

iii. Embryonic Germ Cells

Embryonic germ cells are pluripotent stem cells derived from primordial germ cells, cells which normally develop into mature gametes (eggs and sperm) in adult organisms. Primordial germ cells are found in a specific part of the foetus called the gonadal ridge, and from the mesenchyma of five-to nine- week foetal tissue that resulted from elective

hematopoietic cell transplant in children', *Bone Marrow Transplantation*, vol. 41, 2008, pp. 223-227; Horowitz, M. M., 'Uses and Growth of Hematopoietic Cell Transplantation', in K. G. Blume, S. J. Forman, F. R. Appelbaum (eds) *Thomas' hematopoietic cell transplantation*, Malden, Mass.; Oxford: Blackwell, 2004, pp. 9-15; Horwitz, E. M., et al., 'Transplantability and therapeutic effects of bone marrow-derived mesenchymal cells in children with osteogenesis imperfecta', *Nature Medicine*, vol. 5, 1999, pp. 309-313.

⁵¹ 'Foetal Stem Cells', Epigenetics? The Epigenome Network of Excellence, viewed on 20/05/06, <http://epigenome.eu/en/2,8,19>.

⁵² Gao, J-X., 'Cancer stem cells: the lessons from pre-cancerous stem cells', *Journal of Cellular and Molecular Medicine*, vol. 12 (1), 2008, pp. 67-96.

abortions.⁵³ John Gearhart was the first to derive pluripotent stem cells from human primordial germ cells.⁵⁴

Embryonic germ cells share many of the characteristics of embryonic stem cells. They have extensive proliferative capacity, show no chromosomal abnormalities, and their gene expression is representative of multiple-cell-lineage which suggests that they are the progenitor cells for a number of differentiated cell types.⁵⁵ However, they differ from embryonic stem cells in that they come from foetal tissue and not from pre-implantation embryos or blastocysts and they can propagate for only seventy to eighty population doublings⁵⁶, where embryonic stem cell can give rise to several hundred doublings. Also, embryonic stem cells appear to generate teratomas containing differentiated cells when injected into mice colonies, while human embryonic germ cells do not.⁵⁷

⁵³ 'The Human Embryonic Stem Cell and the Human Embryonic Germ Cell', Stem Cell Information, The National Institutes of Health, available at, <http://stemcells.nih.gov/info/scireport/chapter3.asp>.

⁵⁴ Shambloott, M. J., Axelman, J., Wang, S., Bugg, E. M., Littlefield, J. W., Donovan, P. J., Blumenthal, P. D., Huggins, G. R., Gearhart, J. D., 'Derivation of pluripotent stem cells from cultures human primordial germ cells', *Proceeding of the National Academy of Sciences U. S. A.*, vol. 95, 1998, pp. 13726-13731.

⁵⁵ Shambloott, M. J., Axelman, J., Littlefield, J. W., Blumenthal, P. D., Huggins, G. R., Cui, Y., Cheng, L., Gearhart, J. D., 'Human embryonic germ cell derivatives express a broad range of developmentally distinct markers and proliferate extensively *in vitro*', *Proceedings of the National Academy of Sciences U. S. A.*, vol. 98, 2001, pp. 113-118.

⁵⁶ Ibid.

⁵⁷ Gearhart, J. D., et al., 'Derivation of pluripotent stem cells from cultures human primordial germ cells', *Proceedings of the National Academy of Science*, vol. 95 (23), 1998, pp. 13726-13731; Reubinoff, B. E., Pera, M. F., Fong, C. Y., Trounson, A., Bongso, A., 'Embryonic stem cell lines from human blastocysts: somatic differentiation *in vitro*', *Nature Biotechnology*, vol. 18, 2000, pp.399-404; Reubinoff, B. E., Pera, M. F., Fong, C. Y., Trounson, A., Bongso, A., 'Research Errata', *Nature Biotechnology*, vol. 18, 2000, p. 559; Itskovitz-Eldor, J., Schuldiner, M., Karsenti, D., Eden, A., Yanuka, O., Amit, M., Soreq, H., and Benvenisty, N., 'Differentiation of human embryonic stem cells into embryoid bodies comprising the three embryonic germ layers', *Molecular Medicine*, vol. 6, 2001, pp. 88-95; Kerr, C.L. Shambloott, M. J., Gearhart, J. D., 'Pluripotent stem cell from germ cells', *Methods in Enzymology*, vol. 419, 2006, pp. 400-426.

Embryonic germ cells are easy to obtain and given the number of elective abortions that happen every year around the world⁵⁸, they could provide biomedical researchers with unlimited research material. However, although much work has been done regarding human embryonic stem cells, equivalent research on embryonic germ cells has been lacking. Some researchers have attempted to redress this imbalance. Neil A. Hanley et al. in 2003 studied the pluripotent capacities of embryonic germ cells and looked at their potential use for cell replacement therapies.⁵⁹ John Gearhart et al. in 2006 examined the possibility of utilizing embryonic germ cells for the treatment of a wide variety of human conditions, including diabetes and urological and neurological disorders.⁶⁰

There is also an ethical problem related to using embryonic germ cells. Some groups who oppose to abortion believe that it is morally wrong to use tissue resulted from abortion for research purposes. They fear that such a prospect might encourage women to have more abortions or it could justify abortions that would not otherwise be justified⁶¹. According to their view, researchers who use material from abortions for their research should be considered as accomplices to an immoral act. Furthermore, they believe that a

⁵⁸ Approximately 115,000 abortions occur per day worldwide. See *Abortion Facts*, The Centre for Bio-Ethical Reform, viewed on 23/04/08, available at, <http://www.abortionno.org/Resources/fastfacts.html>. 2004 185,400 abortions were carried out in England and Wales. Only 19% of these were carried out for medical reasons. See *Abortion statistics, England and Wales: 2004*, Government Statistical Service for the Department of Health, 2005, available at http://www.dh.gov.uk/en/publicationsandstatistics/publications/publicationsstatistics/dh_4116461.

⁵⁹ Turnpenny, L. Brickwood, S., Spalluto, C. M., Piper, K., Cameron, I. T., Wilson, D.I., Hanley, N. A., 'Derivation of Human Embryonic Germ Cells: An alternative Source of Pluripotent Stem Cells', *Stem Cells*, vol. 21, 2003, pp. 598-609.

⁶⁰ Kerr, C. L., Gearhart, J. D., Elliott, A. M., Donovan, P. J., 'Embryonic germ cells: when germ cells become stem cells', *Seminars in Reproductive Medicine*, vol. 24 (5), 2006, pp. 304-313.

⁶¹ Doerflinger, R. M., 'The Ethics of Funding Stem Cell Research: A Catholic Viewpoint', *Kennedy Institute of Ethics Journal*, vol. 9 (2), 1999, pp. 137-150.

woman that decided to abort her foetus has decided to forfeit her maternal rights and therefore should not have the right to give consent to the use of the tissue.⁶²

iv. Adult Stem Cells

Adult stem cells are undifferentiated cells found among differentiated cells in a tissue or organ. They can renew and differentiate into the major specialized cell types of the tissue or the organ. The primary role of adult stem cells in a living organism is to maintain and repair the tissue or the organ in which they are found. Parts of the body in which adult stem cells are found include bone marrow, peripheral blood and blood vessels, brain, muscles, liver and pancreas, heart, cartilage and dental pulp. Given the right conditions, adult stem cells can differentiate into a number of different cell types.

Their differentiation can be controlled in the laboratory and they can be used in therapy for many diseases, like diabetes or leukaemia.

It is generally thought that one of the major drawbacks of adult stem cells is that they are less flexible and versatile than embryonic stem cells. Also, adult stem cells have a very short life span and appear to be more difficult to culture *in-vitro*. There seems to be a general belief that stem cell therapies could become a reality much faster if embryonic stem cells could be freely used for research purposes. Yet, not everybody agrees with this claim. Dr. Hollands, the scientific director of 'Cells for Life', a private cord blood bank in Markham Ontario believes that research should focus more on adult

⁶² Burtchaell, J. T., 'University Policy on experimental use of aborted fetal tissue: case study,' *IRB: Ethics and Human Research*, vol. 10 (4), 1988, pp. 7-11; Nolan, K., 'Genug ist Genug: a fetus is not a kidney', *Hastings Center Report*, vol. 18 (6), 1988, pp. 13-19; Shorr, A. F., 'Abortion and fetal tissue research: some ethical concerns,' *Fetal Diagnosis and Therapy*, vol. 9 (3), 1994, pp. 196-203.

stem cells than embryonic stem cells. 'Embryonic stem cells have many legal, moral, ethical and religious objections before even the practicalities of obtaining the cells, growing them, storing them and not least transplanting them are addressed. [...] Adult and umbilical cord blood stem cells are readily available, have no objections associated with them and are tried and tested in clinical use. Umbilical cord blood stem cells, for example, have been used over 3000 times for 45 different diseases!'⁶³

Recent research has shown that adult stem cells are much more malleable than originally thought, and that they can be turned into many different types of cells.⁶⁴ It has been shown that a group of pluripotent stem cells exists in the bone marrow and the umbilical cord which can give rise to a much wider range of cell types.⁶⁵ Adult stem cells have been found to have the ability to proliferate the same way as embryonic stem cells can, which was believed to be an exclusive characteristic of embryonic stem cells. J. Huard et al. used adult stem cells derived from muscle tissue to test their ability for replication. The muscle-derived stem cell expanded for 300 population doublings⁶⁶, which makes their proliferative potential comparative to that of embryonic stem cells.⁶⁷ This discovery is very important since a large number of stem cells is required for research and therapy. Furthermore, an important advantage of using adult stem cells is

⁶³ 'Canadian Stem Cell Expert Speaks Out on Adult vs. Embryonic Stem Cell Research', LifeSiteNews.com, 20/11/2003, viewed on 20/05/06, <http://www.lifesite.net/ldn/2003/nov/03112001.html>

⁶⁴ Jiang, Yuehua et al., 'Pluripotency of mesenchymal stem cells derived from adult marrow', *Nature*, vol. 481, 2002, p. 41-49; Check, E., 'Simple recipe gives adult stem cells embryonic powers', *Nature*, vol. 442, 2006, p. 11; Cyranoski, D., 'Simple switch turns cells embryonic', *Nature*, vol. 447, 2007, p. 618-619.

⁶⁵ Verfaillie, C., et al. 'A role for extrarenal cells in the regeneration following acute renal failure', *Kidney International*, vol. 62(4), pp. 1285-90; Verfaillie, C. et al., 'UNIT 22F.9 Differentiation of Multipotent Adult Progenitor Cells into Functional Endothelial and Smooth Muscle Cells', *Current Protocols in Immunology*, Chapter 22, Unit 227, 2006.

⁶⁶ Deasy, B. M., Gharaibeh, B. M., Pollett, J. B., Jones, M. M., Lucas M. A., Kanda, Y., and Huard, J., 'Long-Term Self-Renewal of Post-Natal Muscle-Derived Stem Cells', *Molecular Biology of the Cell*, vol. 116, 2005, pp. 3323-3333.

⁶⁷ Amit, M., Carpenter, M. K., Inokuma, M. S., Chiu, C., Harris, C. P., Waknitz, M. A., Itskovitz-Eldor, J., Thomson, J. A., 'Clonally derived human embryonic stem cell lines maintain pluripotency and proliferative potential for prolonged periods of culture', *Developmental Embryology*, vol. 227, 2000, pp. 271-278.

that they can be derived straight from the patient's body and hence overcome the problem of transplant rejection. Finally, a new service has lately become available to new parents. The fact that highly versatile stem cells can be found in the umbilical cord has led to the foundation of biobanks that can store stem cells from the umbilical cord of neonates for a course of twenty to twenty-five years, as a potential source of stem cells in case the baby will ever require a treatment or transplant. Cord blood cell could be used to treat conditions such as leukaemia and sickle cell anaemia and spinal cord injuries.

Alternative sources of stem cells

The ongoing ethical problem regarding the use of human embryos for biomedical research as well as practical hindrances that need to be overcome in order for the research to continue, such as shortage of human oocytes or the need for tailored-made stem cells, have led scientists to seek for alternative sources of stem cells and research methods. In 2006 a group from Japan managed to find a way to turn somatic cells into pluripotent stem cells, almost identical to embryonic stem cells.⁶⁸ The same year a method called 'altered nuclear transfer' was developed by Meissner and Jaenisch that could give rise to pluripotent cells without the necessary creation and destruction of an embryo.⁶⁹ In 2007 two scientific teams in the UK, one from Newcastle University and one from King's

⁶⁸ Takahashi, K., and Yamanaka, S., '*Induction of pluripotent stem cell from mouse embryonic and adult fibroblast cultures by defined factors*', *Cell*, vol. 126, pp. 663-673, 2006.

⁶⁹ Meissner, A., Jaenisch, R., '*Generation of nuclear transfer-derived pluripotent ES cells from cloned Cdx2-deficient blastocysts*', *Nature*, vol. 439, 2006, pp. 212-215.

College London, obtained permission to create cytoplasmic hybrids (cybrids), clones using human somatic cells and animal oocytes.⁷⁰ This method allows them to overcome the problem of human oocyte shortage, as well as to circumvent the ethical problems associated with creating human embryos for stem cell harvesting and experiments.

We will explore these alternative sources of stem cells in more detail below:

i. Cytoplasmic Hybrids (Cybrids)

Cybrids are organisms formed by the fusion of animal oocyte with a nucleus from a human body cell. This is called the somatic cell nuclear transfer technique (SCNT) and is the same method used to create Dolly the sheep. An animal egg, usually bovine or lagomorph, is fused with the nucleus of a human body cell. The resulting embryo is not only a clone, but also a hybrid, since it contains a small amount of animal DNA, the mitochondrial DNA. So far, only research teams in China and the USA have used cybrids for research. In the UK the use of cybrids for research became legal only very recently. Scientists from Edinburgh University and Kings College London received permission in 2007 from HFEA to create cybrids and use them for research purposes.⁷¹

This technique is proposed as a potential solution to two problems connected with creating embryonic stem cell lines, and in particular patient-specific and disease-specific

⁷⁰ Nordqvist, Ch., 'Permission to Create Chimeras, Not Hybrids, For Stem Cell Research', *Medical News Today*, 8 November 2006 viewed on 29.07/2008, <http://www.medicalnewstoday.com/articles/56266.php>; Buxton, J., 'HFEA Gives Green Light to 'Cybrid' Embryo Research', *BIONEWS* 424, week 3/9/2007-9/9/2007.

⁷¹ Human Fertilization and Embryology Authority, *Hybrids and Chimeras: A consultation on the ethical and social implications of creating human/animal embryos in research*, April 2007, p. 9, available at http://www.hfea.gov.uk/docs/HFEA_FINAL.pdf.

lines, for research and therapy. The first problem has to do with the very limited number of human oocytes available for research. Embryonic stem cell research on new embryos as it stands depends on human oocyte donation. The number of eggs donated though, is very limited especially because of the difficult, dangerous and intrusive nature of the procedure.⁷² For this reason, researchers came up with the solution of using animal oocytes to create embryos for research. The second problem relating to creating embryonic stem cell lines is the ethical issue of creating and destroying human embryonic life for research purposes. It is believed that the use of animal oocytes could circumvent this ethical objection. However, there are groups who believe that cybrids are “human” embryos with full moral status, since they mainly contain human DNA and therefore, should not be used merely as research material.⁷³

ii. Induced Pluripotent Stem Cells (iPS Cells)

Induced pluripotent stem cells (iPs cells) are a type of pluripotent stem cells that has been artificially created from a non-pluripotent cell, typically an adult somatic cell, through the introduction of certain genes. The genes reprogram the somatic cell to transform into a

⁷² Whittemore, A. S., et al., ‘Characteristics Relating to Ovarian Cancer Risk: Collaborative Analysis of 12 US Case-control studies. II Invasive Epithelial Ovarian Cancers in White Women’, *American Journal of Epidemiology*, vol. 136 (10), 1996, pp. 1184-1203; Delvigne, A., Rozenberg, S., ‘Epidemiology and Prevention of Ovarian Hyperstimulation Syndrome (OHSS): A Review’, *Human Reproduction Update*, vol. 8, 2002, pp. 559-577; Practice Committee of the American Society of Reproductive Medicine, ‘Ovarian Hyperstimulation Syndrome’, *Fertility Sterility*, vol. 80 (5), 2003, p. 1309-1314; Brinton, L. A., et al., ‘Ovarian Cancer Risk After the Use of Ovulation-Stimulating Drugs’, *Obstetric and Gynecology*, vol. 103 (6), 2004, pp. 1194-1203; Pearson, H., ‘Health Effects of Egg Donation may take Decades to Emerge’, *Nature*, vol. 442, 2006, pp. 607-608.

⁷³ Glendhill, R., ‘Human-animal hybrid embryos should be legal says Catholic Church’, *Times Online*, 27/06/07, viewed on 27/06/07, <http://www.timesonline.co.uk/tol/comment/faith/article1993579.ece>. A more detailed discussion regarding the moral status of cybrids is included in Chapter 7 of this thesis.

cell that has the characteristics of a pluripotent cell, for example of an embryonic stem cell, such as the expression of certain stem cell genes and proteins, chromatin methylation patterns, doubling time, embryoid body formation, teratoma formation, viable chimera formation, and potency and differentiability. Scientists first managed to produce iPS cells from mouse cells in 2006⁷⁴ and a year later, in 2007, succeeded in turning human somatic cells into pluripotent cells.⁷⁵

This has been hailed as an important advancement in developmental embryology and stem cell research. Especially Pro-Life groups have been excited by the news, as this method allows researchers to obtain pluripotent stem cells without the controversial use of embryos. Ian Wilmut in November 2007 announced that he had decided ‘not to pursue nuclear transfer’ and that he was going to focus on research using iPS cells.⁷⁶

Although iPS cells seemed to be an ethically uncontroversial source of pluripotent stem cells, a recent article by John Harris and Sarah Chan has stirred the waters by suggesting that based on Wernig’s et al experiments on mice,⁷⁷ iPS cells might have the potentiality to develop into embryos and potentially into adult human beings.⁷⁸ Therefore, they suggest, the use of iPS cells should not be considered ethically right from those who

⁷⁴ Takahashi, K. and Yamanaka, S., ‘Induction of pluripotent stem cell from mouse embryonic and adult fibroblast culture by defined factors’, 2006.

⁷⁵ Yamanaka, S., et al, ‘Generation of germline-competent induced pluripotent stem cells’, *Nature*, vol. 448, 2007, pp. 313-317; Yamanaka, S., et al., ‘Induction of Pluripotent Stem Cells from Adult Human Fibroblasts by Defined Factors’, *Cell*, vol. 131 (5), 30/11/07, pp. 861-872; Kolata, G., ‘Scientists Bypass Need for Embryo to Get Stem Cells’, *The New York Times*, 21/11/2007, viewed on 21/11/07, <http://www.nytimes.com/2007/11/21/science/21stem.html>.

⁷⁶ Highfield, R. ‘Dolly creator Prof Ian Wilmut shuns cloning’, *Telegraph*, 16/11/2007, viewed on 10/05/09, <http://www.telegraph.co.uk/scienceandtechnology/science/sciencenews/3314696/Dolly-creator-Prof-Ian-Wilmut-shuns-cloning.html>

⁷⁷ Wernig, M. et al. have shown that this is possible with mice. Wernig, M., Meisner, A., Foreman, R., et al., ‘In vitro reprogramming of fibroblasts into a pluripotent ES-cell-like state’, *Nature*, vol. 448, 2007, pp. 318-241; the same might be possible with humans.

⁷⁸ Chan, S. and Harris, J., ‘Adam’s fibroblast? The (pluri)potential of iPCs’, *Journal of Medical Ethics*, vol. 34 (2), 2008, pp. 64-66.

object to embryonic stem cell research.⁷⁹ However, as in the case of cybrids, before this claim can be justified the potentiality of iPS cells to result into a live offspring should be demonstrated.⁸⁰

iii. Altered nuclear transfer

Altered nuclear transfer (ANT) is a method that employs the nuclear transfer technique used in cloning but with a preemptive alternation, which ensures that no embryo is created. The nucleus of the somatic cell and the enucleated egg are both altered and manipulated to make sure that genes essential for the integrated and coordinated organization characteristic of living beings are silenced or deleted. The organic growth that results from such a technique is still capable of created an inner cell mass from which pluripotent stem cells could be harvested, but cannot give rise to a human embryo. The advantages of this method of obtaining pluripotent stem cells is that: (i) it does not entail the deliberate creation and destruction of human embryos, (ii) it can produce pluripotent cells genetically identical to the donor of the somatic cell nucleus and therefore, circumvent the problem of immunorejection in cases of tissue transplantation, (iii) it can produce an unlimited range of genetic types to be used in drug testing; and (iv) it can develop into a flexible research tool for the study of early gene expression, imprinting and intercellular communication.⁸¹

⁷⁹ Ibid.

⁸⁰ See relevant discussion regarding cybrids in Chapter 7.

⁸¹ Hurlbut, W. B., 'Altered nuclear transfer as a morally acceptable means to produce human pluripotent stem cells', *Perspectives in Biology and Medicine*, vol. 48 (2), 2005, pp. 211-228.

This method has not yet been attempted with human cells but it has been successfully tested on mice by Rudolf Jaenisch and Alexander Meissner.⁸²

Recent Advances in Stem Cell Research

Stem cell research is a fast-moving area of biomedical research. The innovative methods of treatment promised, as well as the prospect of deepening our understanding of human development and learning how to control it, is the driving force for hundreds of stem cell researchers around the world. Up to now great advances in this area have been achieved.

By 2006 more than four hundred human embryonic stem cell lines had been established in at least twenty countries around the world. However, it is not certain yet whether all of them are actually pluripotent stem cell lines.⁸³ In the summer of 2006 a biotech company based in Singapore produced the first human embryonic stem cell lines with the intention to be used specifically for potential clinical trials. These were the first lines created without the use of animal feeder cells which makes them much safer to use on human subjects.⁸⁴ Geron, another biotech company based in California, is also preparing embryonic stem cells with the same intention. They are planning to use stem cells from lines that have existed since 2001. Although these lines were grown on animal

⁸² Meissner, A., Jaenisch, R., 'Generation of nuclear transfer-derived pluripotent ES cells from cloned Cdx2-deficient blastocysts', *Nature*, vol. 439, 2006, pp. 212-215.

⁸³ Guhr, A., Kurtz, A., Friedgen, K., Loeser P., 'Current State of Human Embryonic Stem Cell Research', *Stem Cells*, vol. 24 (2), 2006, pp. 2187-2191(2187).

⁸⁴ Dennis, C., 'Clinical-use stem cells made in Singapore' *Nature*, published online 26/7/06 doi:10.1038/news060724-8.

feeder cells, extensive tests have rendered them free of animal compounds and therefore suitable for use in clinical trials. Geron was planning to undergo the first clinical trial for spinal cord injuries using embryonic stem cells in May 2008. However, the US Food and Drug Administration decided to delay its permission in need for stronger evidence for the effectiveness and safety of using embryonic stem cells on humans.⁸⁵ A review article published in 2008 identifies seven major problems that block the safe transition of embryonic stem cell from pre-clinical to clinical trials. First in the list is the ethical issue of destroying human embryos during derivation of stem cells; second is the need to develop a way of growing stem cell lines free of animal agents; third is the risk of tumour development if embryonic stem cells were to be transplanted into a patient's body; fourth is the problem of genetic instability; fifth the possibility of transplant rejection; sixth is the problem of epigenetic changes (changes in the action of genes and transformation of normal cells to tumour cells) that can occur in culture over time and seventh, the chromosomal abnormalities that stem cell can accumulate if left in culture for prolonged periods of time.⁸⁶ Some, or all of above, may constitute the reasons that the US Food and Drug Administration felt that it was still too early and too risky to grant permission for clinical trials on humans using human embryonic stem cells.

Although clinical trials are still on hold, numerous experiments on animal subjects have revealed embryonic stem cells' great potentials in treating various diseases. In 2006 a team from the John Hopkins University used human embryonic stem cells to treat paralyzed rats. It was the first time that embryonic stem cells were used to reconnect a

⁸⁵ 'F.D.A. Delays Clinical Trial of Embryonic Stem Cells', *New York Times*, 15/05/08, viewed on 15/05/08, <http://www.nytimes.com/2008/05/15/business/15stem.html?partner=rssnyt&emc=rss>.

⁸⁶ Deb, K. D., and Sarda, K., 'Human embryonic stem cells pre-clinical perspectives', *Journal of Translational Medicine*, vol. 6 (7), 2008, available at <http://www.translational-medicine.com/content/6/1/7>.

damaged part of the nervous system. Scientists found that embryonic stem cells helped to restore communication between the rat's brain through the spinal cord and out to the limb muscles. This is the first step towards finding cure for conditions such as multiple sclerosis, paralysis and other neurological disorders.⁸⁷ Human embryonic stem cells have also been used in many other preclinical trials using animal models for diseases and conditions such as spinal cord injuries in mice⁸⁸, cardiac diseases in rats, pigs and mice⁸⁹, hind limb ischemia in mice⁹⁰, Huntington's disease in rats⁹¹, diabetes in mice⁹², Parkinson's in rodents⁹³ and open neural tube defect in chick embryos⁹⁴.

⁸⁷ Nickoll, H., 'Stem Cells Reverse Rat Paralysis', *BioNews*, 20/6/06.

⁸⁸ Keirsted, H. S., Nistor, G., Bernal, G., Totoiu, M., Cloutier, F., Sharp, K., Steward, O., 'Human Embryonic Stem cell-derived oligodendrocyte progenitor cell transplants remyelinate and restore locomotion after spinal cord injury', *Journal of Neuroscience*, vol. 25, 2005, pp. 4694-4705; Nakamura, M., Okano, H., Toyama, Y., Dai, H. N., Finn, T. P., Bergman, B. S., 'Transplantation of embryonic spinal cord-derived neurospheres support growth of supraspinal projections and functional recovery after spinal cord injury in the neonatal rat', *Journal of Neuroscience Research*, vol. 81, 2005, pp. 457-468.

⁸⁹ Laflamme, M. A., Chen, K. Y., Naumova, A. V., Muskheli, V., Fugate, J. A., Duprass, S. K., Reinecke, H., Xu, C., Hassanipour, M., Police, S., et al., 'Cardiomyocytes derived from human embryonic stem cells', *Nature Biotechnology*, vol. 25, 2007, pp. 1015-1024; Leor, J., Patterson, M., Quinones, M. J., Kedes, L. H., Kloner, R. A., 'Transplantation of fetal myocardial tissue into the infarcted myocardium of rat. A potential method for repair of infarcted myocardium?', *Circulation*, vol. 94, 1996, pp. II332-II336; Kehat, I., Khimovich, L., Capsi, O., Gepstein, A., Shofti, R., Arbel, G., Huber, I., Satin, J., Itskovitz-Eldor, J., Gepstein, L., 'Electromechanical integration of cardiomyocytes derived from human embryonic stem cells', *Nature Biotechnology*, vol. 22, 2004, pp. 1282-1289; Caspi, O., Huber, I., Kehat, I., Habib, M., Arbel, G., Gepstein, A., Yankelson, L., Aronson, D., Beyar, R., Gepstein, L., 'Transplantation of human embryonic stem cell-derived cardiomyocytes improves myocardial performance in infarcted rat hearts', *Journal of the American College of Cardiology*, vol. 50, 2007, pp. 1884-1893.

⁹⁰ Cho, S. W., Gwak, S. J., Kang, S. W., Bhang, S. H., Won Song, K. W., Yang, Y. S., Choi, C. Y., Kim, B. S., 'Enhancement of angiogenic efficacy of human cord blood cell transplantation', *Tissue Engineering*, vol. 12, 2006, pp. 1651-1661.

⁹¹ Song, J., Lee, S. T., Kang, W., Park, J. E., Chu, K., Lee, S. E., Hwang, T., Kim, M., 'Human Embryonic stem cell-derived neural precursor transplants attenuate apomorphine-induced rotational behavior in rats with unilateral quinolinic acid lesions', *Neuroscience Letters*, vol. 423, 2007, pp. 58-61.

⁹² Shim, J. H., Kim, S. E., Woo, D. H., Kim S. K., Oh, C. H., McKay, R., Kim, J. H., 'Directed differentiation of human embryonic stem cell towards a pancreatic cell fate', *Diabetologia*, vol. 50, 2007, pp. 1228-1238.

⁹³ Sonntag, K. C., Pruszak, J., Yoshizaki, T., van Arensbergen, J., Sanchez-Pernaute, R., Isacson, O., 'Enhanced yield of neuroepithelial precursors and midbrain-like dopaminergic neurons from human embryonic stem cells using the bone morphogenic protein antagonist Noggin', *Stem Cells*, vol. 25, 2007, pp. 411-418; Ben-Hur, T., Idelson, M., Khaner, H., Pera, M., Reinhartz, E., Itzik, A., Reubinoff, B. E., 'Transplantation of human embryonic stem cell-derived neural progenitor improves behavioral deficit in Parkinsonian rats', *Stem Cells*, vol. 22, 1994, pp. 1246-1255.

⁹⁴ Lee, D. H., Kim, E. Y., Park, Y., Phi, J. H., Kim, S. K., Cho, B. K., Lim, J., Wang, K. C., 'Reclosure of surgically induced spinal open neural tube defects by the intraamniotic injection of human embryonic stem

While embryonic stem cells are still not considered safe enough to be used for clinical trials, the opposite goes for foetal and adult stem cells. In 2006 researchers from the Oregon Health and Science University set a clinical trial to test foetal nerve stem cell treatment for the Batten disease, a rare genetic brain disorder that can begin early in childhood and which can lead to mental impairment, blindness and paralysis. This was the first attempt to use purified nerve cells in patients. The trial was scheduled to continue for at least four years and the researchers are hoping to discover whether foetal stem cell injections in the brain can slow down the progression of the disease and whether such a treatment is safe.⁹⁵ Other ongoing trials are testing the efficacy of foetal or adult stem cell transplants in curing various diseases and disorders such as Parkinson's, Alzheimer's, Osteoporosis, Leukaemia, Sickle Cell Anaemia etc. The U.S. National Institutes of Health is advertising 2140 clinical trials using adult and foetal stem cells and is calling for volunteers to participate in these trials.⁹⁶

Dr. Peter Hollands, the scientific director of 'Cells for Life', one of the first stem cell banks established in the world, stated that adult stem cells are already successfully used for treatments, where embryonic stem cells have yet to prove their credentials. The use of adult stem cells for therapy have the benefit that (i) it could avoid the problem of immunological rejection, since stem cells can be derived straight from the patient; (ii) it could reduce the risk of tumour formation, which has been frequently observed in cases where mouse embryonic stem cells were transplanted into histocompatible adult mice,

cell in chick embryos 24 hours after lesion induction', *Journal of Neurosurgery*, vol. 105, 2006, pp. 127-133.

⁹⁵ 'Nerve Stem Cell Trial for Brain Disorder Planned', *BioNews*, 9/03/06.

⁹⁶ National Institutes of Health, viewed on 15/06/08,
<http://clinicaltrials.gov/ct/search?term=stem+cell&submit=Search>.

and; (iii) there is no need for the creation and destruction of human embryos.⁹⁷ Among the adult stem cells that have shown already great plasticity potential are the above: haematopoietic, neural, skeletal muscle, mesenchymal (found among heterogeneous collections of cells called fibroblasts) and multipotent adult progenitor (found in bone marrow) stem cells.⁹⁸ Adult stem cells have been used already to treat diseases and conditions such as brain tumours⁹⁹, ovarian cancer¹⁰⁰, multiple myeloma and leukaemia¹⁰¹; autoimmune diseases like skin disorders¹⁰² and multiple sclerosis¹⁰³, stroke¹⁰⁴, immunodeficiencies¹⁰⁵, anaemias¹⁰⁶, cartilage and bone diseases¹⁰⁷, corneal scarring¹⁰⁸, blood and liver diseases¹⁰⁹, heart damage¹¹⁰ and Parkinson's disease¹¹¹.

⁹⁷ Raff, M., 'Adult Stem Cell Plasticity: Fact or Artifact?', *Annual Review of Cell Developmental Biology*, vol. 19, 2003, pp. 1-22 (2).

⁹⁸ Raff, M., pp. 4-7.

⁹⁹ Dunkel, I. J., 'High-dose chemotherapy with autologous stem cells rescue for malignant brain tumors', *Cancer Investigation*, vol. 18, 492-493, 2000.

¹⁰⁰ Stiff, P. J., 'High-dose chemotherapy and autologous stem-cell transplantation for ovarian cancer: An autologous blood and marrow transplant Regis try report', *Annals of Internal Medicine*, vol. 133, Oct. 3, 2000, pp. 504-515.

¹⁰¹ Laughlin, M. J., et al., 'Hematopoietic engraftment and survival in adult recipients of umbilical-cord blood from unrelated donors', *New England Journal of Medicine*, vol. 344, June 14, 2001, pp. 1815-1822; Ohnuma, K., et al., 'Cord blood transplantation from HLA-mismatched unrelated donors at a treatment for children with haematological malignancies', *British Journal of Haematology*, vol. 122 (4), March 2001, pp. 981-987.

¹⁰² Feasel, M. A., et al., 'Complete remission of scleromyxedema following autologous stem cell transplantation', *Archives of Dermatology*, vol. 137, Aug. 2001, pp. 1071-1072.

¹⁰³ Mancardi, G. L. et al., 'Autologous haematopoietic stem cell transplantation suppresses Gd-enhanced MRI activity in MS', *Neurology*, vol. 57, July 2001, pp. 62-68.

¹⁰⁴ Kondziolka, D., et al., 'Transplantation of culture human neuronal cells for patients with stroke', *Neurology*, vol. 55, Aug. 2000, pp. 565-569.

¹⁰⁵ Ziegner, U. H., et al., 'Unrelated umbilical cord stem cell transplantation for X-linked immunodeficiencies', *Journal of Pediatrics*, vol. 138 (4), April 2001, pp. 570-573.

¹⁰⁶ Gore, L. et al., 'Successful cord blood transplantation for sickle cell anemia from a sibling who is human leukocyte antigen-identical: implication for comprehensive care', *Journal of Pediatric Hematology Oncology*, vol. 22 (5), Sept-Oct. 2000, pp. 437-440.

¹⁰⁷ Horwitz, E. M., et al., 'Transplantability and therapeutic effects of bone marrow-derived mesenchymal cells in children with osteogenesis imperfecta', *Nature Medicine*, vol. 5, 1999, pp. 309-313.

¹⁰⁸ Anderson, D. F., et al., 'Amniotic Membrane Transplantation After the Primary Surgical Managements of Band Keratopathy', *Cornea*, vol. 20 (4), May 2001, pp. 354-361.

¹⁰⁹ Matthews-Martin S., et al., 'Successful stem cell transplantation following orthotopic liver transplantation from the same haploidentical family donor in a girl with hemaphagocytic lymphohistiocytosis', *Blood*, vol. 96, Dec. 2000, pp. 3997-3999; Sezer, O., et al., 'Novel approached to the treatment of primary amyloidosis', *Expert Opinion on Investigational Drugs*, vol. 9, Oct. 2000, pp. 2343-2350.

Applications of Stem Cell Research

The successful isolation of embryonic stem cells by Thomson in 1998 in combination with the birth of the first cloned mammal in 1996, created a new “hype” in the area of biomedicine and biotechnology. Scenarios describing new cures for debilitating and lethal diseases and stories about unlimited sources of tailor-made organs for transplant inundated the media. Although very little was known about the potentials of stem cells and their prospects, there was a general belief that treatment for various neural and heart diseases and spinal cord injuries was imminent.

Ten years later stem cell therapies are still at the experimental level. Human embryonic stem cells have not yet been used in clinical trials, and the stories about biobanks full of organs ready for transplantation have not yet come to be realized. Nevertheless, great benefits for science and the general public have already been achieved through stem cell research. Stem cell research provides scientists involved with the opportunity to study the development and differentiation of stem cells into specialized cells. This can prove very useful in trying to unravel the causes of birth defects and genetic abnormalities. Stem cells have revolutionized the area of drug and toxicity testing. Scientists can now create special tissue models and test drugs and other chemicals

¹¹⁰ Strauer, B. E., et al., ‘Myocardial regeneration after intracoronary transplantation of human autologous stem cells following acute myocardial infarction’, *Deutsche Medizinische Wochenschrift*, vol. 126, August 2001, pp. 932-938; Menasché, P. et al., ‘Myoblast transplantation for heart failure’, *Lancet*, vol. 357, January 2001, pp. 279-280.

¹¹¹ Murrel, W., et al., ‘Olfactory Mucosa is a Potential Source for Autologous Stem Cell Therapy for Parkinson’s Disease’, *Stem Cells*, June 2008, pp. 2183-2192.

on them, reducing the need for tests on animals and making clinical trials safer for human subjects. Stem cell research has also helped with advances in gene therapy.

i. Study human development

Research with human stem cells can reveal very useful information regarding early human development. Serious medical conditions such as cancer and birth defects are caused by abnormal cell division and differentiation. Biotechnologists believe that if they manage to unravel the riddle of stem cells, they could possibly discover cures and/or preventive techniques for all these conditions.

Scientists for many years have been working with non-human mammalian embryonic stem cells in their attempt to study early embryological development. Although a lot of the information gathered by this type of research could be used in human studies, they maintain that research on human embryonic stem cells is paramount for our better understanding of human development, and the progress of stem cell therapy. Martin F. Pera and Alan O. Trounson formerly at Monash University in their article 'Human embryonic stem cells: prospects for development' specifically underline the differences between human and other mammalian stem cells - particularly mouse - and highlight the importance of conducting research using human embryonic stem cells. 'A comparison of primate and mouse ES cells [embryonic stem cells] suggests that a common underlying blueprint for the pluripotent state has undergone significant species-specific modification. Technical advances in the propagation and manipulation of human ES cells have improved our understanding of their growth and differentiation, providing

the potential to investigate early human development and to develop new clinical therapies.’¹¹²

In 2006 researchers from the Rockefeller University inserted human stem cells from a newly derived stem cell line into a mouse embryo in order to study the behaviour of human stem cells *in vivo*.¹¹³ Despite the evolutionary difference between a human and a mouse, human embryonic stem cells integrated into the mouse embryo and contributed to its development. ‘This is the first step in a very long journey to both the basic understanding of human development and to the clinical use of human embryonic stem cells’ said Ali Brivanlou, head of the research team¹¹⁴.

In April 2008 a research team from the John Hopkins Institute published their new discoveries regarding early human development using embryonic stem cells. They discovered the critical signal mediated by the protein BMP-4 that drives the differentiation of stem cells and indicates which stem cells will become the placenta and which will become the foetus.¹¹⁵ The co-director of the stem cell program of John Hopkins Institute who participated in the research stated: ‘This is an area of stem cell biology where human and mouse differ significantly and we never would have discovered this if we had limited our studies to using only mouse embryonic stem cells. Adult stem cells just didn’t work for this.’¹¹⁶

¹¹² Pera, M. F., Trounson, A. O., ‘Human Embryonic Stem Cells: Prospects for development’, *Development*, vol. 131, 2004, pp. 5515-5525 (5515).

¹¹³ Brivanlou, Ali et al, ‘Contribution of human embryonic stem cells to mouse blastocysts’, *Developmental Biology*, vol. 295 (1), 2006, pp. 90-102.

¹¹⁴ Rockefeller University Newswire, ‘Human stem cells can contribute to a developing mouse embryo, despite evolutionary differences’, 13/07/06, viewed on 10/06/08
<http://newswire.rockefeller.edu/?id=510&page=engine;>

¹¹⁵ Guibin, Ch., et al. ‘Trophoblast Differentiate Defect in Human Embryonic Stem Cell Lacking PIG-A and GPI-Anchored Cell-Surface Proteins’, *Cell Stem Cell*, vol. 2 (4), April 2008, pp. 345-355.

¹¹⁶ ‘Earliest Step in Human Development Revealed by Human Embryonic Stem Cell Research’, *Science Daily*, 11/04/08, viewed on 10/06/08, <http://www.sciencedaily.com/releases/2008/04/080410184336.htm>.

ii. Replacement of damaged tissue

Perhaps the most important application of human stem cells is the generation of cells and tissue that can be used for potential therapies. Stem cells could be differentiated in the laboratory and then used as replacement cells to repair various types of tissue and organs. Diseases like Parkinson's, Alzheimer's, spinal cord injuries, severe burns, heart diseases, diabetes and many more could find their cure through stem cells.

On the 11th of April 2007 Julio Voltareli and his team published the results of their research. They used adult haematopoietic stem cells to treat 15 patients with Type 1 diabetes. They followed-up their participants for thirty-six months and discovered that all but one of their patients had become insulin-free.¹¹⁷

Although very encouraging and hopeful signs are coming from the area of stem cell therapy using adult and foetal stem cells (embryonic stem cells have not yet been used in clinical trials), these methods are still at the trial stage. Nevertheless, companies such as the 'Stem Cell China' are advertising stem cell therapy for conditions including ataxia, autism, brain injury, cerebral palsy, epilepsy, Huntington's, Parkinson's and stroke. It appears that a lot of patients from the USA and Europe are lured by the hope of a cure. Ignoring the warning voices of the scientists who insist that stem cell therapies

¹¹⁷ Voltarelli, J. C., et al, 'Autologous Nonmyeloablative Hematopoietic Stem Cell Transplantation in Newly Diagnosed Type 1 Diabetes Mellitus', *Journal of the American Medical Association*, vol. 297 (14), 2007, pp. 1568-1576 (1568).

are not yet safe, patients decide to undergo stem cell treatment or participate in clinical trials in countries like China, where such applications are legal, with uncertain results.¹¹⁸

iii. Testing of new drugs

Stem cells can be used for drug and chemical safety tests. Stem cells could be differentiated in the laboratory to cell types that are useful for screening particular drugs. For example, cancer cell lines could be used to test anti-tumour drugs with cells that are able to mimic the response of human tissue to the drug. This can be a cheaper, more ethical and more effective way to test drugs and chemicals alleviating the need to perform tests on animals. The difficulty researchers are facing with using stem cells for tests is that they must be able to recreate the exact conditions when testing for different drugs, otherwise the results will not be valid. So far, it has proved extremely difficult to control the growth of stem cells to this high degree in order to secure exact replication of conditions.

Since 2006 scientists of the Technion-Israel Institute of Technology have been using human embryonic stem cells to perform drug trials. They inject human embryonic stem cells into laboratory animals, creating an artificial human cellular environment. They test the reaction of the human tissue to various novel drugs. Karl Skorecki, the director of the Institute, published in 2006 the result of a trial of anti-cancer drug using

¹¹⁸ 'Stem Cell Therapy Disease Warning', BBC News, 19/05/05, viewed on 14/06/08, <http://news.bbc.co.uk/1/hi/health/4561933.stm>; Munshi, N., 'More patients seek experimental stem cell therapy', *The Boston Globe*, 13/06/08, viewed on 14/06/08, http://www.boston.com/news/local/articles/2008/06/13/more_patients_seek_experimental_stem_cell_therapy/.

this technique in the April issue of *Cancer Research* journal.¹¹⁹ Scientists hope that by using human embryonic stem cells they could make human drug trials much more cost- and- time effective as well as much safer for human subjects.

On October 2, 2007 a consortium of scientists and drug companies backed by the UK government announced their decision to create a human embryonic stem cell bank to be used specifically for drug testing. Their aim is to turn human stem cells into liver tissue and use it to test for harmful compounds during early drug development. This type of research could help reduce the number of animals used by pharmaceutical companies for drug testing. In the first instance, the project will work with generic stem cells representative of the population at large. Their goal is in the future to have available stem cells with genetic differences that predispose people to certain conditions and, thus, to be able to conduct more genotype-specific drug testing.¹²⁰

In an article published in *Nature* in 2007, Ian Wilmut, the scientist who created Dolly advocated the creation of cybrids for use in drug testing. 'Cells derived from cytoplasmic hybrids would be among the most powerful tools available for identifying potential treatments from inherited diseases, particularly when the genetic cause has not been identified. ... In particular, these hybrid cells could be used to develop rapid assays for screening potential drugs. This would identify compounds that might stabilize the condition of the patient and prevent progression of disease. In a single year, cellular assays could screen thousands of compounds in high-throughput screens. Over the same period at the same cost, only a handful of compounds could be tested in mouse

¹¹⁹ Tsukerman M., Skorecki, K. et al, 'The Influence of a Human Embryonic Stem Cell-Derived Microenvironment on Targeting of Human Solid Tumor Xenografts', *Cancer Research*, vol. 66, 2006, pp. 3792-3801.

¹²⁰ Jha, A., 'Stem Cell bank for drug testing may cut animal experiments', *The Guardian*, 3/10/07, viewed on 3/10/07, <http://www.guardian.co.uk/science/2007/oct/03/stemcells.animalrights>.

models.’¹²¹ The law that permits the creation of cytoplasmic hybrids (cybrids) to be used in stem cell research was passed in the United Kingdom in May 2008. Apart from embryonic stem cells, adult stem cells have also been used in drug screening and drug safety assessments.¹²² IP’s cells are the real promise in this area as they can be cultured from cells from patients with known diseases.

iv. Screening of toxins

Stem cells may be useful for screening potential toxins in substances such as pesticides, cosmetics and most of household and industrial chemicals.¹²³ Before all these products are released to the market, they have to go through many tests in order to secure that they are safe for human use.

Current methods of ensuring the safety of these products involve the use of animals. The Chairman and Chief Office of Neuralstem Inc. Dr Karl Johe advocated the benefits of using human stem cells for toxicity tests at the John Hopkins Medicine Symposium in 2006. ‘Today we often use animals to test thousands of chemicals in a host of everyday products to determine their harmful effect on the brain. Replacing this wasteful and expensive process with effective in vitro models is a goal for private sector and EPA alike. Using neural stem cells, we can generate a large number of human brain

¹²¹ Wilmut, I., ‘Man or beast? Man *and* beast!’, *Nature Reports Stem Cells*, Published Online: 7/06/07 doi:10.1038/stemcells.2007.3 It is worth noting though that later that year Ian Wilmut announced that he was going to abandon research on nuclear transfer and focus more on iPS cells. (see footnote 76).

¹²² Trosko, J. E., ‘Use of human embryonic and adult stem cells for drug screening and safety assessment’, *Toxicology*, vol. 226 (1), 2006, p. 31; also, Alison, M. R., ‘Adult stem cell-derived liver stem cells as models for hepatotoxicity’, *Toxicology*, vol. 226 (1), 2006 p. 32.

¹²³ Wobus, A. M., ‘Embryonic stem cell-derived cardiac, neuronal and pancreatic cells as models to study toxicological effects’, *Toxicology*, vol. 226 (1), 2006, pp. 32-33.

neurons in laboratory dishes on which we can test these chemicals. Testing on human cells provides more relevant information than testing on animals or animal cells, creating a new model that is cleaner, most cost effective and much more humane'.¹²⁴

Since 1991 the European Union is trying to minimize animal use in toxicology screens for drugs, chemical, and consumer product regulations. According to the European law, once the European Centre for the Validation of Alternative Methods (EVCAM) of the European Union Joint Research Centre validates a toxicology test, all companies within the EU are required to use it. Until 2006 the centre had validated more than twelve in vitro tests and it was estimated that 'a combination of in vitro assays to test chemical's acute toxic effects, for example, cut the number of animals required from 45 per substance to only eight. That figure works out to about 250,000 fewer animals per year for this purpose alone.'¹²⁵

So far, the most successful example of using human stem cells for toxicity testing is the use of human cardiac tissue. 'Many drugs have been removed from the market as a consequence of cardiac toxicity –an infamous example is terfenadine, an antihistamine that caused close to 100 deaths as a consequence of adverse cardiac events when it was released on the market. Embryonic stem cells have since been differentiated into cardiac tissue that shows potential as a toxicological model of disease, and many companies involved in using embryonic stem cells have research programs in this area.'¹²⁶

¹²⁴ Neuralstem Inc., 'Neuralstem Scientist Sees Stem Cell Technology Replacing Animal Toxicity Testing in many Drug and Chemical Products', March 2006. available at http://www.neuralstem.com/dynamicdata/Data/docs/pr_3-28-06%20jhmedical.pdf.

¹²⁵ Gunjan S., 'European Union Revamps Toxicology Testing in Attempt to Limit Animal Use, Improve Prediction', *Journal of the National Cancer Institute*, vol. 98 (11), 2006, p. 729-780 (729).

¹²⁶ Everts, S., 'Reducing Animal Testing Using Stem Cells', *Chemical and Engineering News*, vol. 85 (3), 2007.

v. Testing methods of gene therapy

Gene therapy is a method aiming at correcting defective genes responsible for disease development. There are two possible ways to administrate gene therapy. The first method is to directly infuse the therapeutic transgene into the patient's body using a vehicle, normally a virus. The therapeutic agent is inserted into the virus and then the virus is injected into the patient's body. The second method involves the use of human stem cells. So far, only adult stem cells have been used in trial gene therapies. Stem cells taken from the patient's body are infused with the therapeutic transgene. Scientist let them grow in culture where they can control the level of therapeutic agent production and select the most suitable cells to administrate into the patient's body. Scientists seem to favour this type of gene therapy because the ability stem cells have to self-renew could possibly reduce or eliminate the need to repeat the therapy.¹²⁷

In 2008 researchers from the UC Davis Stem Cell Program used human bone-marrow derived stem cells to test gene therapy to cure diseases of the blood. Jan Nolte director of the program and senior author of the study said: 'The results of our decade-long study of adult human stem cell transplantation shows that there is little risk of adverse events caused by gene transfer, and that adult human stem cells do not pose a cancer risk when implanted into different organs.'¹²⁸ The study was published online in May 6, 2008 issue of Molecular Therapy.

¹²⁷ Zwaka, T.P., 'Use of Genetically Modified Stem Cells in Experimental Gene Therapies' in *Regenerative Medicine*, Department of Health and Human Services, August 2006, </info/scireport/2006report.htm>.

¹²⁸ University of California - Davis - Health System, 'Stem Cell Researchers Demonstrate Safety Of Gene Therapy Using Adult Stem Cells,' *Science Daily*, 7/05/08, viewed on 12/06/08 <http://www.sciencedaily.com/releases/2008/05/080506163910.htm>.

However, there has been a very limited number of successful gene therapy trials using adult stem cells. Scientists believe that this is due to the adult stem cells' inherent limitations and they hope to achieve much better results if they start using embryonic stem cells instead. For example, it has been shown that adult stem cell manipulation in order to introduce the therapeutic transgene affects some of their most important properties, such as plasticity, self-renewal and the ability to survive and grow when inserted into the patient's body. Such problems could be overcome if embryonic stem cells that require less manipulation were used. Yet, further research will be necessary in order to determine whether this speculation is grounded.¹²⁹

The Ethical Debate Surrounding Stem Cell Research

Since 1998, when Thomson and his team managed successfully to isolate stem cells from an embryo, a long and vigorous debate started regarding the use of human embryos for biomedical research. Anke Guhr et al. in their article 'Current State of Human Embryonic Stem Cell Research: An overview of cell lines and their use in experimental work' published in 2006 note that '[i]nterestingly, the number of scientific reviews and papers on ethical or legal aspects of hESC research by far exceeded the number of original publications describing experimental work conducted with these cells, suggesting that

¹²⁹ Zwaka, T.P., 'Use of Genetically Modified Stem Cells in Experimental Gene Therapies' in *Regenerative Medicine*, Department of Health and Human Services, August 2006, </info/scireport/2006report.htm>.

discussion about hESC research has outpaced actual research activities and continues to do so'.¹³⁰

The main objection to stem cell research is that most of the time it requires the destruction of the embryo used. Many consider that the destruction of a potential human being is morally wrong. Others, on the other hand maintain that the prospect that stem cell research could lead to potential treatments for a number of debilitating and life threatening diseases outweighs any moral considerations regarding the life of an early human embryo. The central issue that mainly determines this debate is the question of when human life begins, or more specifically when human life begins to matter morally. There are many answers to this problem and each one of them has its fervent supporters and its impassioned adversaries.

i. Fertilization

Some believe that human life begins to matter morally right from the moment of fertilization. The fertilization of an oocyte by a sperm marks the beginning of a new, unique human being. The zygote formed contains unique human genetic material and has the potential to grow into a unique human being. According to this view, human embryos have full moral status from the moment of conception and therefore any research that might cause harm or death to the embryo is immoral, unless it intends to be therapeutic for the embryo or increase its chances for implantation. The main principle behind this view is that 'every human being has a right to life and human beings must not be

¹³⁰ Guhr, A., et al., 'Current State of Human Embryonic Stem Cell Research: An Overview of Cell Lines and Their Use in Experimental Work', *Stem Cells*, vol. 24, 2006, pp. 2187-2191 (2189).

discriminated against on the basis of age, sex, race, disability or any other biological characteristic.’¹³¹ Philosophers such as Donald McCarthy and Albert Moraczewski¹³², Don Marquis¹³³ and Elizabeth Harman¹³⁴ have defended this position. This is also the position held by the official Christian Roman Catholic Church¹³⁵, the Christian Orthodox Church¹³⁶ and some Protestant theologians¹³⁷. According to the Christian dogma of creation, God created man according to His Image and Likeness. This means that human life is sacred and should always be respected and protected.

ii. Implantation

After fertilization the new zygote does not implant immediately in the uterus. The fertilized egg remains in the fallopian tubes and manages to implant into the uterine wall after six to ten days from fertilization. The moment of implantation, which marks the beginning of pregnancy, has also been suggested as the starting point of embryos’ moral lives. In relation to embryos created through *in vitro* fertilization, it has been argued that

¹³¹ Saunders, P., ‘The Moral Status of the Embryo’, *Nucleus*, 2006, pp. 17-26 (18).

¹³² McCarthy, D. G., and Moraczewski, A. S., (eds.), *An Ethical Evaluation of Fetal Experimentation: An Interdisciplinary Study*, St. Louis, MO: Pope John XXIII Medical-Moral Research Education Centre, 1976.

¹³³ Marquis, D., ‘The Moral-Principle Objection to Human Embryonic Stem Cell Research’, in Lori Gruen, Laura Grabel and Peter Singer (eds.), *Stem Cell Research: The Ethical Issues*, 2007, pp. 51-66.

¹³⁴ Harman, E., ‘Creation ethics: the moral status of early fetuses and the ethics of abortion’, *Philosophy and Public Affairs*, vol. 28 (4), 1999, pp. 310-324.

¹³⁵ Congregation for the Doctrine and Faith, *Donum Vitae: Instruction on Respect for Human Life in Its Origin and on the Dignity of Procreation*, Replies to Certain Questions of the Day February 22, 1987, available at <http://www.cin.org/vatcong/donumvit.html>.

¹³⁶ Breck, J., *The Sacred Gift of Life: Orthodox Christianity and Bioethics*, Crestwood, NY: St Vladimir’s Seminary Press, 2000; Engelhardt, H. T., *The Foundations of Christian Bioethics*, Lisse: Swets and Zeitlinger Publisher, 2000.

¹³⁷ Meilaender, G., ‘Some Protestant Reflections’, in Suzanne Holland, Karen Lebacqz and Laurie Zoloth (eds.), *The Human Embryonic Stem Cell Debate: Science, Ethics and Public Policy*, Cambridge Massachusetts: MIT Press, 2001, pp. 141-147; O’Donovan, O., *Begotten or Made?*, New York: Clarendon Press, 1984; Hauerwas, S., ‘The Inhuman Use of Human Beings: A Statement on Embryo Research. Ramsey Colloquium’, *First Things*, vol. 49, January 1995, pp. 17-21 (signatory).

they acquire the potential to develop into a human being and consequently the moral status of a human being only after they are implanted into a woman's body. This is a type of argument used by some U. S. Senators like Orrin Hatch who support some form of embryonic stem cell research but are opposed to abortions. In July 2001 Sen Hatch, senator and member of The Church of Jesus Christ of Latter Day Saints, said in the Senate subcommittee meeting: 'I believe that a human's life begins in the womb, not in a petri dish or refrigerator.'¹³⁸

This view is also connected with the philosophical position that draws a distinction between 'potential' and 'possible' persons. According to this view, as presented by Peter Singer, Karen Dawson¹³⁹ and Carol Tauer¹⁴⁰, human embryos that are kept in laboratories are only 'possible' persons. The only way for the pre-implantation embryo to exercise this potential is if they are implanted into a womb. On the other hand, embryos and fetuses already implanted and developing in a woman's body are potential persons and, under normal circumstances, will grow to be fully fledged human persons. This position argues that while we might have a moral obligation to refrain from any action that could result in harming or killing a potential person, we do not have the same obligation for possible persons.

¹³⁸ 'Hatch Backs Research Cloning', *The New American*, 3 June 2002, viewed on 12/10/07, http://findarticles.com/p/articles/mi_m0JZS/is_11_18/ai_n25048763.

¹³⁹ Singer, P., and Dawson, K., 'IVF Technology and the Argument from Potential' in *Embryo Experimentation: Ethical, Legal and Social Issues*, Peter Singer, Helga Kuhse, Stephen Buckle, et al. (eds.), Cambridge: Cambridge University Press, 1990, pp. 76-89.

¹⁴⁰ Tauer, C., 'Bringing Embryos into Existence for Research Purposes' in *Contingent Future Persons: On the Ethics of Deciding Who Will Live, or Not in the Future*, Nick Fotion and Jan C. Heller (eds.), Dordrecht, Netherlands: Kluwer Academic Publishers, 1997, pp. 171-190.

iii. Fourteenth Day

The fourteenth day of gestation has also been proposed as the starting point of morally valuable life. In the late twentieth century developmental embryology revealed new information/facts regarding the development of embryonic life. Many philosophers, and particularly those with a Catholic stance, did not want to ignore the new information coming from the scientific world. Paul Ramsey¹⁴¹, Norman Ford¹⁴², Karl Rahner¹⁴³, John Mahoney¹⁴⁴, J. T. Eberl¹⁴⁵ and Richard McCormick¹⁴⁶ argued that the marker for the beginning of the life of an individual was the fourteenth day after conception. They hold that only human individuals can have moral value. Until the blastocyst stage the embryo is just a collection of undifferentiated cells and not an organized individual. The embryo prior to the fourteenth day of gestation has the ability to divide and become two or more embryos. Hence, before that day one cannot be certain whether one is dealing with one or multiple individuals. This fact raised interesting questions regarding personal identity and, within the Christian circles, the theory of 'ensoulment'. Furthermore, the formation of the primitive streak, the basis of the nervous system, marks the beginning of the conscious life of an organized unified entity. Even in normal pregnancies the first fourteen days are a very unstable period for the embryo. Almost 50 per cent of the

¹⁴¹ Ramsey, P., 'Reference Points for Deciding About Abortion', in Noonan Jr., (ed.), *The Morality of Abortion: Legal and Historical Perspectives*, Cambridge: Mass.; Shannon and Wolter, 1970.

¹⁴² Ford, N. M., *When did I begin? Conception of the Human Individual in History, Philosophy and Science*, Cambridge: Cambridge University Press, 1988.

¹⁴³ Rahner, K., 'The Problem of Genetic Manipulation' in *Theological Investigations*, vol. 9. New York: Herder and Herder, 1972, pp. 225-252.

¹⁴⁴ Mahoney, J., *Bioethics and Belief: Religion and Medicine in dialogue*, London: Sheed and Ward, 1984.

¹⁴⁵ Eberl, J. T., 'The Beginning of Personhood: A Thomistic Biological Analysis', *Bioethics*, vol. 14, 2000, pp. 134-157.

¹⁴⁶ McCormick, R., 'Who or What is the Preembryo?' *Kennedy Institute of Ethics Journal*, vol. 1 (1), 1991, pp. 1-15.

embryos conceived are discarded naturally within these first two weeks. Karl Rahner was amazed by this information. He thought that it is logically impossible for so many human lives to get lost every day without anyone noticing.¹⁴⁷ Others, for example John Harris¹⁴⁸, Julian Savulescu and Katrien Devolder¹⁴⁹, have argued that this biological fact should make similar loss of embryonic life in research morally acceptable. Individuality as the beginning of human moral life has also been suggested by thinkers outside the Christian world, such as Mary Warnock¹⁵⁰ and Eric Olson¹⁵¹.

iv. Quickening

Another view holds that humans acquire moral value at the moment of quickening which is placed somewhere between eighteen and twenty-four weeks after conception. At this stage the mother is able to feel the foetus moving in her womb. This is an old belief that originates from the old Aristotelian position that quickening was the moment the foetus was infused with a rational human soul. This position was later adopted by Augustine and Thomas Aquinas and so found its way into the western Christian world. It remained as the official position of the Catholic Church until the 19th century.

Peter Singer rejects this view outright: 'But the idea that the soul enters the fetus at quickening is an outmoded piece of superstition, discarded now even by Catholic

¹⁴⁷ Rahner, *The Problem of Genetic Manipulation*, p. 226.

¹⁴⁸ Harris, J., *Wonderwoman and Superman: The Ethics of Human Biotechnology*, Oxford: Oxford University Press, 1992.

¹⁴⁹ Devolder, K. and Savulescu, J., 'The moral imperative to conduct embryonic stem cell and cloning research', *Cambridge Quarterly of Healthcare Ethics*, vol. 15, 2006, pp. 7-21.

¹⁵⁰ Warnock, M., 'Do Human Cells Have Rights?' *Bioethics*, vol. 1, 1987, pp. 11-12. Full exposition of Warnock's position in Chapter 3 and evaluation of the individuality position in Chapter 6.

¹⁵¹ Olson, E., *The Human Animal: Personal Identity without Psychology*, New York, Oxford: Oxford University Press, 1999.

theologians. ...it cannot be denied that the fetus is alive before this moment, and we do not regard the lack of a capacity for physical motion as negating the claims of paralysed people to go on living.’¹⁵²

Some, though, believe that the status of the foetus increases gradually as it goes through the various stages of development and the moment of quickening is an important threshold. Proponents of this latter view are R. Gillon¹⁵³ C. Cameron and R Williamson¹⁵⁴.

v. Viability

Viability has been suggested as another threshold for moral status. According to this view a foetus becomes morally valuable the moment it acquires the ability to be viable outside of the mother’s womb. The point of viability is been placed somewhere ‘between twenty and twenty-eight weeks of pregnancy and it keeps shifting as neonatal medical technology and knowledge develops’.¹⁵⁵ Advances in the science of neonatal paediatrics have made possible to routinely keep alive very premature infants born as early as on the twenty-second week of gestation.¹⁵⁶

¹⁵² Singer, P., *Practical Ethics*, Cambridge: Cambridge University Press, 1979, p. 110.

¹⁵³ Gillon, R., ‘Is there a ‘new ethics of abortion’?’, *Journal of Medical Ethics*, vol. 27, Supplement II, 2001, pp. ii5-6; Gillon R., ‘The ethics of antenatal screening and of abortion for fetal abnormality’, in Paintin, D., (ed.), *Ante-natal screening and abortion for fetal abnormality*, London: Birth Control Trust, 1997.

¹⁵⁴ Cameron, C., Williamson, R., ‘In the world of Dolly, when does a human embryo acquire respect?’, *Journal of Medical Ethics*, vol. 31, 2005, pp. 215-220.

¹⁵⁵ Lotz, M., ‘Ethical Arguments Concerning the Moral Permissibility of Abortion’, *National Foundation for Australian Women*, 2005, p. 3, available at, <http://nfaw.org/assets/socialpolicy/Health/lotz-abortionethics.pdf>.

¹⁵⁶ Draper, E.S., Manktelow, B., Field, D. J., James, D., ‘Prediction of survival for preterm births by weight and gestational age: retrospective population based study’, *British Medical Journal*, vol. 319, 1999, pp.

Raanan Gillon notes that: 'Viability is the criterion favoured by many who work in the field of neonatology, and also by some gynaecologists who accept abortion but who also believe that at some stage in their development fetuses acquire a right to life after which they should not be aborted.'¹⁵⁷ C. Cameron and R. Williamson maintain that 'as [the foetus] moves from dependent to independent and acquires the ability to survive outside the uterus, it must be regarded, legally and ethically, as a legal person entitled to the full set of rights of any other individual.'¹⁵⁸

However, ethicists such as M. Tooley¹⁵⁹, J. Harris¹⁶⁰, P. Singer¹⁶¹ and J. Savulescu¹⁶² reject viability as a moral argument on the grounds that: (i) the point at which the foetus can survive outside the mother's womb depends on medical technology available at the place of birth; and (ii) dependence on another person should not be regarded as an ethically significant factor. In cases such as an elder person being depended on his or her carer, or the child being depended on its mother for food and shelter, dependence does not have any bearing on the child's or the elder person's moral status.

1093-1097; Fraser, J., Walls, M., McGuire, W., 'Respiratory complications of preterm birth', *British Medical Journal*, vol. 329, 2004, pp. 92=62-965.

¹⁵⁷ Gillon, 'Is there a 'new ethics of abortion'?', p. ii7.

¹⁵⁸ Cameron, Williamson, 'In the world of Dolly, when does a human embryo acquire respect?', p. 219.

¹⁵⁹ Tooley, M., 'Abortion and Infanticide', in P. Singer (ed.), *Applied Ethics*, Oxford: Oxford University Press, 1986, pp. 57-85 (70-73).

¹⁶⁰ Stanton, C., Harris, J., 'The moral status of the embryo post-Dolly', *Journal of Medical Ethics*, vol. 31, 2005, pp. 221-225.

¹⁶¹ Singer, *Practical Ethics*, pp. 108-110; Stanton, C., Harris, J., 'The moral status of the embryo post-Dolly', *Journal of Medical Ethics*, vol. 31, 2005, pp. 221-225.

¹⁶² Savulescu, J., 'Is current practice around late termination of pregnancy eugenic and discriminatory? Maternal interests and abortion', *Journal of Medical Ethics*, vol. 27, 2001, pp. 165-171.

vi. Birth

Birth seems to be a logical marker of the beginning of human life. In most countries, the moment of birth is the point at which the new human being acquires fundamental legal status and, therefore, killing an infant is considered murder.¹⁶³ The main argument regarding the acquisition of a legal, and consequently, moral status at birth is the fact that from this point onwards the new human being ‘has a separate and independent existence ... and is living in virtue of the functioning of its own organs.’¹⁶⁴

Some thinkers believe that birth does not have any significance regarding the moral status of the human being. Leonard Sumner in *Abortion and Moral Theory* defends this thesis by arguing that: ‘Birth is a shallow and arbitrary criterion of moral standing, and there seems to be no way of connecting it to a deeper account. In most respects the infant shortly after birth has the same natural characteristics (is the same kind of creature) as a fetus shortly before birth; the same size, shape, internal constitution, species membership, capacities, level of consciousness and so forth. Biologically a full-term fetus resembles a newborn infant much more than it resembles a zygote or an embryo.’¹⁶⁵ Peter Singer¹⁶⁶ and Raanan Gillon¹⁶⁷ also accept this argument.

¹⁶³ Lang, W., ‘The legal status of the human foetus: A comparative analysis’, in D. Evans (ed.), *Conceiving the embryo*, The Hague; London: Martinus Nijhoff, 1996, pp. 249-268.

¹⁶⁴ *Rv Hutty* [1953] VLR 338; [193] ALR 689 (Vic Sup Ct, Barry J), quoted in Cameron, Williamson, ‘In the World of Dolly, when does a human embryo acquire respect?’, *Journal of Medical Ethics*, p. 219.

¹⁶⁵ Sumner, L.W., *Abortion and Moral Theory*, Princeton, N. J.: Princeton University Press, 1981, p. 53.

¹⁶⁶ ‘The fetus/baby is the same entity whether inside or outside the womb, with the same human features (whether we can see them or not) and the same degree of awareness and capacity for feeling pain.’, Singer, *Practical Ethics*, p. 108.

¹⁶⁷ Gillon, R., *Philosophical Medical Ethics*, Chichester: Wiley, 1985.

Others, such as Jose Luis Bermudez, believe that recent advances in neurophysiology¹⁶⁸ suggest that birth is of moral significances because it allows the neonate ‘in virtue of being born, [to] acquire morally significant properties [primitive form of self-consciousness] that cannot be possessed by fully-term fetuses.’¹⁶⁹ Mary Anne Warren also supports this position: ‘One reason is that, although there may be no dramatic difference between the sentience of a foetus a day before birth and the neonate a day later, there are probably differences between the sentience and other mental capacities of newborns, and those of incipiently sentient foetuses. The sentience of newborns is both more firmly established by the behavioral and neurophysiological evidence, and in all probability, more highly developed.’¹⁷⁰

The argument from birth combined with the argument from viability that was mentioned above has played a significant role in discussions concerning abortion legislation.¹⁷¹ Cases of premature infants that survived abortion and were born alive led the U. S. Government to pass a new law. The ‘Born-Alive Infants Protection Act of 2001’ became Public Law No. 107-207 in 2002. ‘The purpose of this law is to establish that “infants who are born alive, at any stage in development (and regardless of the

¹⁶⁸ Meltzoff, A. N., Moore, M. K., ‘Imitation of Facial and Manual Gestures by Human Neonates’, *Science*, vol. 198, 1977, pp. 75-78; Field, T. M., Woodson, R., Greenburg, R., Cohen, D., ‘Discrimination and Imitation of Facial Expression by Neonates’, *Science*, vol. 218, 1982, pp. 179-181; Meltzoff, A. N., Moore, M. K., ‘Newborn Infants Imitate Adult Facial Gestures’, *Child Development*, vol. 54, 1983, pp. 702-709.

¹⁶⁹ Bermudez, J. L., ‘The Moral Significance of Birth’, *Ethics*, vol. 106 (2), 1996, pp. 378-403 (403).

¹⁷⁰ Warren, M. A., ‘A Response to Robert Card’, *Bioethics*, vol. 14 (4), 2000, pp. 352-359 (355).

¹⁷¹ Engelhardt, H. T. Jr., ‘Viability, abortion and the difference between a fetus and an infant’, *American Journal of Obstetrics and Gynecology*, vol. 116 (3), 1973, pp. 429-234; Tooley, M., ‘Abortion and Infanticide’, in P. Singer (ed.), *Applied Ethics*, Oxford, New York: Oxford University Press, 1983, pp. 57-85; Campbell, A. V., ‘Viability and the moral status of the fetus’, in R. Porter and M. O’Conor (eds.), *Abortion: medical progress and social implications*, London: Pitman, 1985, pp. 228-243; Card, R. F., ‘Infanticide and the liberal view on abortion’, *Bioethics*, vol. 14 (4), 2000, pp. 340-351; Harris, J. and Holm, S., ‘Abortion’, in H. LaFollete, *The Oxford Handbook of Practical Ethics*, Oxford; New York: Oxford University Press, 2003, pp. 112-136; ‘Abortion Time Limits: A briefing paper from the BMA’, *British Medical Association*, May 2005, available at <http://www.bma.org.uk/ap.nsf/content/AbortionTimeLimits>.

circumstance of their birth), are persons who are entitled to the protections of the law.”¹⁷²

In July 2007 the South Korean Supreme Court decided that an unborn baby is not a human being until the mother goes into labour. It ruled that since ‘...the mother did not have labour pains, which is the beginning of childbirth...the unborn baby cannot be recognized as a human being.’¹⁷³

vii. Post-Birth

Some believe that we become valuable sometime after birth, when human beings acquire personal characteristics such as self-awareness. Michael Tooley and Peter Singer are the most famous advocates of this view. Tooley argues in his article ‘Abortion and Infanticide’: ‘Since it is virtually certain that an infant at such a stage of its development does not possess the concept of a continuing self, and thus does not possess a serious right to life, there is excellent reason to believe that infanticide is morally permissible in most cases where it is otherwise desirable. The practical moral problem can thus be satisfactorily handled by choosing some period of time, such as a week after birth, as the interval during which infanticide will be permitted.’¹⁷⁴ Singer mentions in his *Practical Ethics*: ‘A week-old baby is not a rational and self-conscious being, and there are many nonhuman animals whose rationality, self-consciousness, awareness, capacity to feel, and

¹⁷² Boyle, D., Carlo, W. A., Goldsmith, J., Halamek, L., Perlman, J., Wiswell, T. E., Kattwinkler, J., Engel, W., Gonzales, J. L., Singhal, N., Nightengale, B., Myers, T., ‘Born-Alive Infants Protection Act of 2001, Public Law No. 107-207’, *Pediatrics*, vol. 111, 2003, pp. 680-681.

¹⁷³ ‘South Korean Courts: Life Begins at Birth’, 16/07/07, viewed on 20/04/08, <http://ihmhermitage.stblogs.com/2007/07/16/south-korean-courts-life-begins-at-birth/>.

¹⁷⁴ Tooley, ‘Abortion and Infanticide’, p. 84.

so on, exceed that of a human baby a week, a month, or even a year old ... Even when we talk with two and three year old children it is usually very difficult to elicit any coherent conception of death, or of the possibility that someone – let alone the child itself – might cease to exist.’¹⁷⁵

Jeff McMahan is another ethicist who supports the view that only personal life matters morally, although he does not explicitly place the beginning of personal life at the age of two.¹⁷⁶ The question of the moral status of human life is an old one. It takes a new, urgent importance, however, when applied to the discipline of bioethics. From the realm of abstract philosophy derives the realm of applied ethics. Here questions are more pressing and answers carry greater responsibility.

Regarding the moral status of the human embryo, scientists and ethicists are asked to balance the moral obligation that we (might) have to protect human embryonic life with the moral obligation we (might) have to increase the welfare of, and even save the lives of, future persons through research. To find such a balance is a very difficult task. That is why one can detect such a variation across countries in the legislation regulating stem cell research. In Europe, the United Kingdom, Belgium and Sweden seem to have the most relaxed laws regarding the use of embryos for biomedical research, whereas Germany and Italy are very strict and totally prohibit such research. In the U.S., research is permissible only when funding comes from the private sector. Federal funding is available only for research conducted on stem cell lines that were created from embryos

¹⁷⁵ Singer, P., *Practical Ethics*, pp. 122 and 124.

¹⁷⁶ McMahan, J., *The Ethics of Killing: problems at the margins of life*, Oxford: Oxford University Press, 2002; McMahan, J., ‘Killing Embryos for stem cell research’, *Metaphilosophy*, vol. 38 (2-3), April 2007, pp. 170-189.

created before 2001. Countries like China, Hong Kong and North Korea allow almost any type of research.

Other Ethical Considerations

The question of at which point of development the human being acquires moral value impacts directly on one more ethical problem relating to embryonic stem cell research. In order for biotechnologists to proceed with their research, they need embryonic stem cell lines to study and experiment with. The most obvious source of human embryonic stem cells is human embryos. Therefore, scientists are asking for permission to create embryos for research purposes. Is it morally right, though, to create human embryos destined only to be destroyed on a laboratory bench?

i. Creating human embryos for research

There are two ways of creating embryos for research, either through *in vitro* fertilization or by using the somatic cell nuclear transfer technique (SCNT). SCNT technique is mainly proposed for the creation of embryonic stem cells for therapeutic purposes for the following reasons: (i) there is a general shortage of tissue for transplantation. Creation of transplant tissue at request by cloning could be the answer to this problem; (ii) SCNT

technique allows the creation of stem cells that will share the exact genetic code with the patient. In the event of tissue transplantation the problem of immunorejection will be eliminated because the patient's body will recognize the cells as belonging to itself; and (iii) SCNT technique will permit biotechnologists to create cellular and tissue models of specific diseases. Researches could use these models to study the occurrence and development of diseases and test their reaction to new drugs before they move to animal and clinical trials.¹⁷⁷

However, if SCNT method becomes a general practice it will mean that embryos will be created and destroyed for the sole purpose of providing patients with therapeutic stem cells.

For people who regard the embryo as a human being with full moral status, such a practice is totally immoral. The principal moral code is never to use a human being as means to other people's ends. Allowing the creation of embryos for research implies that embryos are treated merely as commodities, on a par with cells and tissue. Another objection relating to stem cell research and cloning is the "slippery slope argument". Many believe that if all the problems related to cloning techniques would be overcome and human cloning would become a common practice, then it is only a very small step from therapeutic applications to reproductive ones. It is feared that once the practical problems are solved, scientists will be tempted to proceed with the implantation of the embryos into willing women who will carry the pregnancies to term. Leon Kass argues that '...allowing cloned embryos to be produced for biomedical research and/or stem cell extraction is morally highly problematic. It crosses several important moral boundaries,

¹⁷⁷ Savulescu, J., 'Ethics of Stem Cell and Cloning Research', available at http://www.practicaethics.ox.ac.uk/Resources/Cloning_StemCell/ethics_stemcell_cloningresearch.pdf.

accelerating our slide down a slippery slope (or, more accurately, jumping us off an ethical cliff) into a dehumanizing world of genetic control of offspring and the routine use of nascent life as a mere natural resource.’¹⁷⁸

Reproductive cloning is currently illegal in the UK, Germany and Australia among others, and strict laws are in place for the prohibition and prevention of such an attempt.¹⁷⁹ For many the existence of such laws is enough to dismiss the fear for the ‘slippery slope.’¹⁸⁰

Concluding Remarks

This ethical controversy regarding the moral status of the human embryos, its effect on biomedical research, and the restricting laws that resulted from it led scientists to search for alternative methods for acquiring stem cells that do not require the destruction of human embryos. As listed above there are a number of possible sources of stem cells that could be used in research. The production of iP cells is a recent discovery that allows for

¹⁷⁸ Leon, K., *Drawing the line between ethical regenerative medicine research and immoral human reproductive cloning. Testimony for the United States Senate Committee on the Judiciary*, March 19, 2003, available at <http://judiciary.senate.gov/hearing.cfm?id=622>. Also, see National Consultative Ethics Committee for Health and Life Sciences (CCNE), *Opinion 67 on the preliminary draft revision of the law on Bioethics*, France, 18/01/01; Church and Society Commission of the Conference of European Churches (CSCCEC), ‘Therapeutic uses of cloning and embryonic stem cells’, in *Ethical Aspects of Human Stem Cell Research and Use* [Opinion No 15], European Group on Ethics in Science and New Technologies to the European Commission (EGE), Paris: EGE: 2000, 193-199.

¹⁷⁹ Nippert, I., ‘The pros and cons of human therapeutic cloning’, *Journal of Biotechnology*, vol. 98(1), 2002, pp. 53-60; Harris, J., *On Cloning*, London: Routledge, 2004.

¹⁸⁰ Russel, B., ‘Slippery Slopes to Slippery Slopes: Therapeutic Cloning and the Criminal Law’, *American Journal of Bioethics*, vol. 7 (2), pp. 63-64.

(almost) ethically uncontroversial stem cell research. Similarly, adult stem cells are always a potential alternative. Also, embryos that have been rendered unsuitable for IVF because they have stopped dividing can still produce stem cells fit for biomedical research.¹⁸¹ Altered nuclear transfer is another way to circumvent the ethical problems of stem cell research. They create stem cell lines from embryos that, due to an induced genetic mutation are incapable of implanting.¹⁸²

However, researchers believe that not all sources are equally suitable for all different kinds of experimentation and research, or for potential therapeutic applications. Stem cells from embryos with or without induced genetic abnormalities could affect the results of research and might be dangerous if used for therapeutic purposes. Regardless of the very encouraging signs coming from adult stem cell research regarding their plasticity and ability for treating various diseases, scientists still believe that it would be very risky for the future of the research to limit their investigations only to sources of non-embryonic stem cells. Also, further research is necessary to demonstrate whether iPSCs can actually work as an alternative to pluripotent stem cells derived from human embryos.

Setting aside all of the technical and practical problems stem cell research still faces today, it seems that the major hindrance of stem cell research is the ethical issue of the moral status of the human embryo that is yet to be resolved. Both sides of the debate - those who believe that the embryo has no moral status and the research should continue, and those who believe that the human embryos have moral rights and should not be used

¹⁸¹ Zhang, X., et al, 'Derivation of Human Embryonic Stem Cells from Developing and Arrested Embryos', *Stem Cells*, vol. 24, 2006, pp. 2669-2676.

¹⁸² Meissner, A., Jaenisch, R., 'Generation of nuclear transfer-derived pluripotent ES cells from cloned Cdx2-deficient blastocysts', *Nature*, vol. 439, 2006, pp. 212-215.

for research purposes - argue strongly for their positions. The former group believes that human embryos that are lacking basic personhood characteristics, such as self-awareness and self-consciousness, have no right to life. Therefore, their destruction should not constitute an ethical problem. Furthermore, the benefits that could result from such research are of such importance for the future welfare of humanity that should outweigh any objections to this research. The opposition group, on the other hand, believes that human life has moral value at any point of development. Consequently, according to their view, human beings should never be used for research that will inevitably lead to their destruction. As we mentioned above, there are many views that sit somewhere between these two extremes.

Is the need for further knowledge and new treatments sufficient to outweigh the right that human embryos have to life? Or, if we approach the problem from the pro-research point of view, does the human embryo have a claim to life that could constitute a valid reason for banning its use as research material. This two-fold dilemma is the main concern of this thesis. Those that object to the embryonic stem cell research are mainly Pro-Life campaigners with specific religious background. Secular ethicists and philosophers remain unconvinced by their religious arguments. They believe that such a debate should be kept secular and religious views should not dictate research decisions, ethical judgment, and public policy making. Is it necessary, however, for all religious views to be kept separate from this biomedical debate? Does this stance mean that religious ideas have nothing to contribute to this dialogue? I am going to argue that when it comes to questions regarding human life, religion, and in particular Christian tradition, has much to contribute. Although, theological beliefs are doctrine-specific, the

philosophical edifice that underlines them could be argued-for outside of the narrow boundaries of a specific religion.

Before I proceed with showing how theological ideas could be used in this particular biomedical debate, I shall discuss two of the most popular secular views regarding the moral status of the human embryo. I will turn to John Harris and Mary Warnock in order to investigate and demonstrate the philosophical views behind the position that human embryos have no moral value. Then I shall look at the writings of Tristram Engelhardt, a philosopher and Christian theologian that has contributed much to this particular debate. Although a theologian and a believer, he also believes that religions ideas should be kept separate from the public domain. At the same time, he argues, religious groups should be allowed to organize their own communities and be permitted to follow their own ethical code. In the two following chapters, I will demonstrate how it is possible for Christian philosophical positions to be used in the secular biomedical debate regarding the moral status of the human embryo. I will argue that the question is not whether the human embryo is morally equal to human persons, but whether human life has any level of intrinsic moral value that ranks it morally above inanimate objects and non-human animals. I will show how the traditional Christian anthropological theory that understands human beings as psychosomatic unities could be justified outside of the Christian religion and used as a basis for ethical decisions about the use of human embryos in stem cell research. I will establish the intrinsic moral value of human life, and consequently of human embryonic life, and I will argue that the deliberate creation, and later destruction, of human embryos for the purposes of research is unethical when there are other alternatives available.

As we saw above, there are many alternative sources of stem cells that could be used for research and there are many alternative methods that can be employed for stem cell harvesting that do not necessarily involve the creation and destruction of human embryos. So, I will argue that the intrinsic level of moral worth that the human embryo possesses asks that this method should be the last option considered, and that permission should be given only when no other resource is available.

Chapter 3

WHO HAS MORAL STATUS? JOHN HARRIS' 'PERSONS' AND MARY WARNOCK'S 'INDIVIDUALS'

Introduction

In this chapter I will explore the ethical theory of two famous and prominent philosophers of our time who have affected decision making and legislation in UK. These philosophers are Professor John Harris and Dame Mary Warnock. They both represent the secular side in the bioethical debate. Nonetheless, their ethical views are not mutually compatible. Even though they both conclude that using pre-fourteenth day human embryo (or pre-embryos in Mary Warnock's terminology) for research and experiments is morally right, the arguments they use to reach this conclusion are

completely different. In order to unravel Harris' and Warnock's ethical theory, their understanding of personhood and their view on the moral status of the human embryo I will ask five questions: (i) What is a human being?; (ii) What is a person?; (iii) Are there human beings that are not persons and persons that are not human beings?; (iv) What is a human person?, and; (v) What is the moral status of the human embryo?

John Harris, the Sir David Alliance Professor of Bioethics at the University of Manchester, is one of the most controversial and influential leading figures in the area of bioethics. He has written and published numerous books and articles and has served on many bioethical committees. His purely secular ethical theory concerning human beings and personhood, which has been described as provocative by many, has influenced to a great degree the UK governmental policy on bioethical issues. John Harris is an enthusiastic proponent of libertarian-consequentialism, who has been working in bioethics and specifically on human cloning for over twenty-five years. He has fashioned an anthropology that has pushed the boundaries of secular ethics to the extremes and raised a lot of eyebrows even within the non-religious world. His well articulated and argued ideas have inspired numerous interesting discussions and debates.

Harris' main account of personhood is a combination of consequentialism and a Kantian concept of the special moral status of persons. He identifies the criterion of personhood as a set of Lockean-type capacities, such as self-consciousness, self-awareness and language, that make it possible for one to value one's own existence. He maintains that what matters morally is not humanhood but personhood, and therefore it is 'persons' and not just 'humans' that have full moral value. He first developed this theory in his books *Violence and Responsibility*¹, and *The Value of*

¹ Harris, J., *Violence and Responsibility*, London: Routledge and Kegan Paul, 1980.

*Life*², and in the article 'In Vitro Fertilization: The Ethical Issues'³. In his article 'Full Humans and Empty Morality'⁴ he defends his concept of 'person' and his objections to favouritism towards human beings, namely speciesism. His belief that the ultimate value of the lives of persons is not inalienable or immutable is argued for in his article 'The Right to Die Lives! There is No Personhood Paradox'⁵.

In 1992 Harris published *Wonderwoman and Superman*⁶, where he linked his theory of personhood with the idea of genetic manipulation, enhancement and generally how biotechnology could affect the life of human beings. He talked about new reproductive techniques, therapeutic use of embryonic and foetal tissue, and cross-species creations. He suggested that humans should make use of the new science to eliminate genetic disease, increase longevity and create resistance to environmentally-caused diseases, but also to enhance character traits, dispositions and intellectual capacities. Our species' evolution should not be left to the blind eye of natural evolution but should be guided by ourselves. He reprised and expanded this theme in 1998 in *Clones Genes and Immortality*⁷ and again in 2007 with *Enhancing Evolution*⁸.

Harris' book *On Cloning*⁹ is a defence of human cloning for both reproductive and therapeutic purposes. He suggests that two fundamental freedoms, the freedom to start a family and the freedom from state control, support the case of human cloning.

² Harris, J., *The Value of Life: An Introduction to Medical Ethics*, London, Boston, Melbourne and Henley: Routledge and Kegan Paul, 1985.

³ Harris, J., 'In Vitro Fertilization: The Ethical Issues (I)', *The Philosophical Quarterly*, vol. 33 (132), 1983, pp. 217-237.

⁴ Harris, J., 'Full Humans and Empty Morality', *The Philosophical Quarterly*, vol. 35 (138), 1985, pp. 70-73.

⁵ Harris, J., 'The Right to Die Lives! There is No Personhood Paradox', *Medical Law Review*, vol. 13, 2005, pp. 386-392.

⁶ Harris, J., *Wonderwoman and Superman: the Ethics of Human Biotechnology*, Oxford: Oxford University Press, 1992.

⁷ Harris, J., *Clones, Genes and Immortality: Ethics and the Genetic Revolution*, Oxford, New York: Oxford University Press, 1998.

⁸ Harris, J., *Enhancing Evolution: the ethical case of making better people*, Princeton, NJ.; Oxford: Princeton University Press, 2007.

⁹ Harris, J., *On Cloning: Thinking in Action*, London: Routledge, 2004.

He deals with the safety issues related to cloning, and he underlines the significance of somatic cell nuclear transfer (SCNT) cloning method and stem cell research for the welfare of humanity. He further emphasizes the great importance for conducting and continuing human embryonic stem cell research, expands his personhood theory and addresses all the major objections against stem cell research in a number of articles published in major journals: 'The Ethical Use of Human Embryonic Stem Cell in Research and Therapy'¹⁰, 'Scientific Research is a Moral Duty'¹¹, 'The moral status of the embryo Post-Dolly'¹², 'Stem cell research, personhood and sentience'¹³ and 'Embryos and Eagles: Symbolic Value in Research and Reproduction.'¹⁴

In 1985 Mary Warnock published her book *A question of life*¹⁵, which was a reprint of the report produced by the Human Fertilization and Embryology Committee she chaired a year before with a personal introduction and conclusion. In this book she defended the decision of the Committee to allow research on pre-embryos (pre-fourteenth-day embryos), and to award the post-fourteenth-day embryos with full moral value. She argued that early embryos are not human individuals because: (i) they have the ability to split into two or more embryos; (ii) there is not enough collaboration between the parts of the early embryo to make it an organism and; (iii) differentiation has not started yet and therefore, there are no signs of even

¹⁰ Harris, J., 'The Ethical Use of Human Embryonic Stem Cells in Research and Therapy', in J. Burley and J. Harris (eds.), *A Companion to Genethics*, Malden, Mass.; Oxford: Blackwells Publishers, 2002, pp. 158-174.

¹¹ Harris, J., 'Scientific research is a moral duty', *Journal of Medical Ethics*, vol. 31, pp. 242-248.

¹² Harris, J., and Stanton, C., 'The moral status of the embryo post-Dolly', *Journal of Medical Ethics*, vol. 31, 2005, pp. 221-225.

¹³ Harris, J. and Bortolotti, L., 'Stem cell research, personhood and sentience', *Reproductive BioMedicine Online*, vol. 10, Suppl. 1, 2005, pp. 68-75.

¹⁴ Harris, J. and Bortolotti, L., 'Embryos and Eagles: Symbolic Value in Research and Reproduction', *Cambridge Quarterly of Healthcare Ethics*, vol. 15, 2006, pp. 22-34.

¹⁵ Warnock, M., *A question of life: the Warnock report on human fertilisation and embryology*, Oxford: Blackwell, 1985.

rudimentary sentience. In the articles ‘In Vitro Fertilization: The Ethical Issues (II)’¹⁶, ‘Do Human Cells have Rights?’¹⁷ and ‘Experimentation on human embryos and fetuses’¹⁸ she supported her view regarding the moral status of the early and late human embryo. In the *An Intelligent Person’s Guide to Ethics*¹⁹ she once again supported the committee’s decision regarding embryo experimentation and stressed the need for a consensus morality based on imagination and rationality for the smooth running of public life.

John Harris’ ‘Persons’

I will start with an exploration of Harris’ beliefs on human beings, persons and human embryos within the framework of the five questions that were outlined above.

i. What is a human being?

“The truth is that in philosophy and even elsewhere it is a question of finding the problem and consequently of positing it, even more than of solving it. For a speculative problem is solved as soon as it is properly stated ...” (Henri Bergson).

¹⁶ Warnock, Mary, ‘In Vitro Fertilization: The Ethical Issues (II)’, *The Philosophical Quarterly*, vol. 33 (132), 1983, pp. 238-249.

¹⁷ Warnock, M., ‘Do human cells have rights?’ *Bioethics*, vol. 1 (1), 1987, pp. 1-14.

¹⁸ Warnock, M., ‘Experimentation on human embryos and fetuses’, in A H. Kuhse and P. Singer (eds.), *A Companion to Bioethics*, Oxford: Blackwells Publisher, 1998.

¹⁹ Warnock, M., *An Intelligent person’s guide to ethics*, London: Duckworth Overlook, 2004.

John Harris deals with the question ‘What is a human being?’ in the first chapter of his book *The Value of Life: An Introduction to Medical Ethics*.²⁰ A human being is an existing creature of human origin. It is the living product of a fertilized human female gamete (oocyte) by a human male gamete (sperm). Whether the fertilization occurs *in vivo* or *in vitro* is not of any importance. Children created by using artificial reproductive techniques such as IVF are as much human beings as naturally conceived and born children. The method of fertilization plays no significant role and has no impact on their humanity. When the first test-tube baby was born, a lot of questions were raised and a lot of concerns were expressed from scientists and philosophers; nevertheless, no one seemed to question L. Brown’s humanity, mainly because she was the product of fertilization.

On the contrary, when human cloning became a possibility after Dolly the sheep was born, the question “Are clones real human beings?” was the first to be asked. This time the method was of importance. The somatic-cell-nuclear-transfer (SCNT) technique is a form of parthenogenesis. It is an asexual reproduction of an already existing genome. Rudolf B. Brun, a biologist from the Texas Christian University distinguishes between clones and embryos on this basis. A clone, or a nuclear transplant, as he calls them, ‘...is not an embryo. An embryo develops from a zygote, the fusion product of an egg fertilized by a sperm. [...] Fertilization brings forth a unique genome that provides the genetic foundation for the growing human being [...] Because of this significant genetic difference, I suggest applying the term “somatome” (somatome = body-part) [...].’²¹ On the 14th of June 2002 the US Senator Feinstein argued in favour of cloning. She called cloned human embryos ‘unfertilized

²⁰ Harris, *The Value of Life*, pp. 7-28.

²¹ Brun, R. B., ‘Cloning humans? Current science, current views, and a perspective from Christianity’, *Differentiation* 69, 2002, pp. 184-187 (184).

eggs [that] are not capable of becoming a human being'²². Senator Hatch said about clones created through SCNT 'Frankly, I am not sure that *human being* [emphasis added] would even be the correct term for such an individual heretofore unknown in nature.'²³

It is true that fertilization in its traditional sense does not occur when using SCNT technique, but even so, if the embryo is implanted, the result will still be a new living creature. Many thinkers start talking about copies of people and Xerox children²⁴. They think a clone to be the artificial copy of real human being and, because of that, less of a human; a soulless replica of an authentic human person. The questions of whether clones will have a human soul, whether they will be real humans or merely humanoids, occupied the public and scientific discussions. It is in this debate where their fallacy lies. They have mistaken the physics for metaphysics. The notions of 'being' and 'person' are not identical and John Harris, among others, helped this misconception to be clarified.

In the article 'Stem cell research, personhood and sentience' Harris states: 'In ordinary language we identify persons with human beings, but the notion of a person is not *co-extensive* [emphasis added] with the notion of a human being. More specifically, whereas an individual counts as a human being if it belongs to the species *Homo sapiens*, it counts as a person not by virtue of species membership, but

²² *Congressional Record*, No. 79, June 14, 2002, page S. 5580 available at <https://www.epa.gov/ocir/legilibrary/pdf/2002/061402cr.PDG>.

²³ Statement of the Honourable Orrin Hatch, Hearing before the Senate Judiciary Committee, February 5, 2002, available at http://www.senate.gov/~hatch/index.cfm?FuseAction=Topics.Detail&PressRelease_id=180430&Month=2&Year=2002.

²⁴ Pence, G. E., *Who's afraid of Human Cloning*, Oxford: Rowman and Littlefield, 1998; Eisenberg, L., 'Would Cloned Humans Really Be Like Sheep?', in Arlene Judith Klotzko (ed.), *The Cloning Sourcebook*, Oxford: Oxford University Press, 2001, pp. 70-79; Hollowell, K., 'Will human clones have souls?', *WorldNetDaily.com*, 07/02/2004, viewed on 28/02/04, http://www.worldnetdaily.com/news/article.asp?ARTICLE_ID=36983; Damon, D., 'Do clones have souls?', *BBC News*, 06/05/2001, viewed on 28/02/04 <http://news.bbc.co.uk/1/hi/programmes/bh/1315575.stm>; Macintosh, K., L., *Illegal Beings: Human Clones and the Law*, Cambridge: Cambridge University Press, 2005.

of the capacities it possesses'²⁵. It is clear that for Harris biology can help us only to classify the being in question under a species category, but cannot determine the moral value of this being. We will return to this statement later in this chapter.

If human clones were to be created, there would be nothing 'non-human' about them. Biologically they would be one hundred per cent human; beings of human origin, carrying a human genome, a human DNA. Whether these human beings would have a 'soul' or not, is a different question that cannot be answered by looking at their genesis. Even if clones were to be created without brains or without heads, for that matter, as long as there was a heart beating and they were able to sustain themselves, they should be considered to be human beings. Thus, to the question "Is a clone a real human being?" Harris answers that a clone is as real a human being as you and I.

The application of SCNT cloning opened the door to the creation of hybrids by using non-human animal eggs. Also, introducing a gene from the same or another species, or even an artificial gene, into the human genome by direct genetic manipulation would result in the creation of a transgenic human. This could happen for either therapeutic or enhancing reasons. Harris believes that even the biology of a being can be manipulated without changing the nature of the being.²⁶ Of course, in cases like this, the 'sorites paradox'²⁷ cannot be avoided. How many genes can be replaced or introduced to an organism before this organism crosses from one species to another? Harris does not try to solve the paradox. What we can conclude from his discussion on transgenics and chimeras in his book *Clones, Genes and Immortality* is

²⁵ Harris, J. and Bortolotti, L., 'Stem cell research, personhood and sentience', p. 69.

²⁶ ²⁶ Harris, *Clones, Genes and Immortality*, pp 171-195.

²⁷ 'The sorites paradox is the name given to a class of paradoxical arguments, also known as little-by-little arguments, which arise as a result of the indeterminacy surrounding limits of application of the predicates involved.' Hyde, D., 'Sorites Paradox', Edward N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*, Fall 2008 Edition,
URL = <<http://plato.stanford.edu/archives/fall2008/entries/sorites-paradox/>>.

that as long as the alterations in an organism stay at a minimal level this organism does not lose its nature, whereas if we have two different species equally contributing to the creation of a new being then the being falls under the definition of a chimera.²⁸

ii. What is a person?

As we saw above, John Harris distinguishes between the terms ‘human being’ and ‘person’. He acknowledges that these two terms can be used as synonyms in our everyday discussion, but only because we permit ourselves a level of poetic licence. Of course, in our world we know of no other species, apart from *Homo sapiens*, that belong to the category of persons. Nevertheless, this does not mean that all *Homo sapiens* are persons and all non-*Homo sapiens* non-persons. What distinguishes a person from a non-person is the possession of certain characteristics and not the biological group that one belongs to. Harris arrives at this conclusion through a very carefully constructed inductive method. He is concerned with ‘...whether people have a particular significance and value simply because they are people and have whatever it takes to be a person, and are not quite different sorts of beings, animals or plants perhaps, which do not have what it takes.’²⁹

He explores two different strategies in order to find out what entitles an individual to be considered a person. The first strategy is called “*What is a person?*” He uses Glifford Grobstein’s strategy as he developed it in his book *From Chance to Purpose*³⁰, in which he dealt with the question of personhood. Grobstein tried to underline the differences between humans and other creatures that justify us valuing

²⁸ Harris, *Clones Genes and Immortality*, pp. 19-21, 178ff.

²⁹ Harris, *The Value of Life*, p. 8.

³⁰ Grobstein, G., *From Chance to Purpose*, London: Addison Wesley, 1981, pp. 84ff.

the former more than the latter. He argued that what makes us 'characteristically human' is our ability to be persons, i.e. the ability to be self-aware. He proposed three criteria of personhood. First is the ability to respond to external stimuli. Second is the possession of '...non-behavioural functional processes, like the nervous system'³¹, and third is the ability to be '...generally recognisable as a human and evoke empathy as another self.'³²

However, Harris thought these criteria to be problematic. Indeed, he could not see how these features are enough to distinguish a man from an animal. The first criterion is the capacity to respond to a stimulation from the external environment. However, every living organism has the inherent ability to respond to their environment and react to external stimuli. Hence, this cannot be a criterion for personhood. The second criterion requires the existence of a nervous system. Humans are not the only beings that have a nervous system. On the contrary, all vertebrate and many invertebrate animals have one. Again, this criterion is not strong enough to differentiate animals from humans. The third criterion refers to how other people perceive an individual; whether they think s/he is one of them, and whether they feel empathy and sympathy for him/her. As Harris denotes, it is true that self-awareness develops through social interaction, but '...what reason is there to suppose that we feel empathy only in the presence of self-awareness?'³³ We have similar feelings for creatures like little kittens and puppies, yet we do not necessarily think them to be persons.

Harris suggests that a better approach would be to look just for features that make us persons, rather than looking for features that make us human. By this he means characteristics and type of behaviour that if we were to observe in other

³¹ Harris, *The Value of Life*, p 13.

³² Ibid.

³³ Ibid.

creatures we would think them to be persons. He considers John Locke's theory on persons, which is well-summarized in the following quotation '...we must consider what person stands for; which, I think, is a thinking intelligent being, that has reason and reflection, and can consider itself, the same thinking thing, in different times and places; which it does only by that consciousness which is inseparable from thinking and seems to me essential to it; it being impossible for any one to perceive without perceiving that he does perceive.'³⁴ Harris thinks that Locke correctly identified intelligence and self-consciousness as the features that separate persons from non-persons. The ability to perceive that we perceive is valuable, and also makes valuing other things possible.

This is the bridge to the second strategy called "*What is valuable?*" Harris believes that existence is not valuable *per se*. There are sorts of existences that are more valuable than others and some have an immediate value where others do not. This syllogism is trying to reveal what makes life precious and not what makes persons different from other creatures. There may be a lot of things that make life important. As Harris points out, there are '...as many accounts of what makes life valuable as there are valuable lives.'³⁵ However, we should focus not on what you or I value more in our lives, rather on the fact that you and I are able to consider the question and give an answer. Of course, in order to do that we should possess the basic level of rationality that leads to the type of self-awareness that Locke referred to. This is where the two strategies converge. Hence, whoever has the capacity to value his/her own life, this individual may be called a person.

³⁴ Locke, J., *An Essay Concerning Human Understanding*, bk. II, ch. 27, London: Oxford University Press, 1964.

³⁵ Harris, *The Value of Life*, p. 16.

iii. Human beings that are not persons and persons that are not human beings

So far we have one account for what is a human being and one for what is a person. The question to come next is whether all human beings are persons or not. By looking at what has already been discussed, it is relatively easy to answer this question. John Harris maintains that human beings are not always persons. He believes that we should keep the notion 'person' species-neutral and have it stand for '...any being who has what it takes to be valuable'.³⁶ His account seems to be an open one; it allows any being to enter the category, as long as it can satisfy the prerequisites. Another quality of this concept of persons is that it tells us how to distinguish a person from a non-person as well as why a person is more important than a non-person. Someone who has the minimum rationality needed to understand his/her own existence and to have the will to experience the future is someone worth valuing and protecting. It would be morally wrong to harm such a being. The biggest harm we can do to such an individual is to kill him/her; i.e. '...the wrongness of permanently depriving her of whatever it is that makes it possible for her to value her own life.'³⁷ This does not lead us to the conclusion that it is not morally wrong to harm other beings that are not persons. It is immoral to impose pain and agony on a sentient non-person, but it is a different wrong in kind and degree³⁸.

Harris tells us that not all human beings are persons and not all non-human beings non-persons. But how are we to understand whether this individual standing in front of us has the capacity to value his/her own life or not, in order to decide our

³⁶ Harris, *The Value of Life*, p. 9.

³⁷ Harris, *The Value of Life*, p. 17.

³⁸ Harris, *The Value of Life*, p. 117.

behaviour towards him/her? ‘This is simplicity itself’³⁹, says Harris. All we have to do is ask him/her. Any individual who possesses a form of language from the most basic to the most sophisticated should be able to communicate to us that s/he values, or not, his/her life and wants to go on living, or not. (One should not be puzzled by the ‘or not’ in this sentence. As I said before, just the capacity to entertain the question is all that is required in order to recognise someone as a person. Whether this person prefers life from death, is a different question.) Hence, language is very important, or to use Harris’ description, the hallmark of personhood.⁴⁰ Language enables us to communicate with other people but also allows us to communicate with ourselves. We talk with words and we think with words as well. It is impossible to think of something which we do not know how to name, or that we are unable to describe by using words. ‘It is apt that our thoughtful self-monitoring process is sometimes called the ‘internal soliloquy’.⁴¹

The problem arises when we are confronted with creatures that do not have, or seem not to have, a language. The most obvious examples are found in the animal kingdom. We know that many species of animals, especially higher vertebrates, have a form of language, i.e. a way to communicate with animals from the same species. Does this mean that animals, such as dogs and cats are persons? Harris turns to another ability in order to tell whether animals are self-aware or not; the ability to recognise one’s own reflection in a mirror. The majority of animal species lack this ability. If you put a mirror in front of a bird, the bird will “think” that its reflection is another animal and will start flirting with it. In fact, this is a common way to keep birds “happy” in cages. Yet, animal psychologists have invented tests which show that some animals have developed a basic sense of self-awareness. Harris uses Gordon

³⁹ Harris, *The Value of Life*, p. 19.

⁴⁰ Ibid.

⁴¹ Ibid.

Gallup's experiments with chimpanzees and orang-utans as an example.⁴² Gallup took monkeys, chimpanzees and orang-utans and painted red patches on their wrists and foreheads. Then he put the animals in front of a mirror. While monkeys did not show any interest in their reflection, chimpanzees and orang-utans started after a while scratching the red patches on their own bodies. This led Dr Gallup to conclude that chimps and orang-utans have some level of self-awareness. It is questionable, though, whether this level of self-awareness is enough to make them value their own existence and anticipate their future.

Another example Harris uses from the area of animal psychology is the experiments of Allen and Beatrice Gardner. These two psychologists managed after a long and hard procedure to teach a female chimpanzee called Washoe, the American Sign Language. After five years Washoe had a vocabulary of 160 words and was able to form simple sentences. For Harris this is a clear indication that Washoe can speak and consequently, she is self-aware, i.e. she is a person. This makes it even more clear that for Harris language is the key feature of personhood. Maybe it is true that if we put all chimpanzees and orang-utans from Gallup's experiment through a similar programme, they could learn to talk. Would that mean, though, that these animals are already persons and should be treated as ones? Harris admits that this is a very important question '...because of the parallel with human beings. We know that almost all human beings will naturally develop the capacity for language and equally naturally will develop into persons. Should we, when considering human beings, take the first signs of self-awareness (that might be revealed in the same way as it has been in monkeys) as signs that self-consciousness is also established and all that is required is a language to express that self consciousness? It seems to me doubtful that signs of

⁴² Harris, *The Value of Life*, footnote 18, p. 19.

self-awareness are also signs of the sort of self-consciousness that enables persons to value their own lives.’⁴³ Hence, the answer is ‘no’. Only beings who can clearly demonstrate that they are self-conscious are persons.

However, Harris tries to put a safety net and protect beings that might be self-conscious but cannot tell us yet. ‘In the cases of beings that we know are of a kind capable of being persons, like humans and perhaps chimpanzees, we should perhaps take the capacity to exhibit self-awareness of the rather primitive sort we have noted to be the first signs of personhood. [...] where self-awareness is exhibited by beings of the kind we know to be capable of valuing their own lives we should, for safety’s sake, take this as evidence that they are, or are starting to be, self-conscious and able to value their existence.’⁴⁴ But still, this does not mean that all human beings, i.e. all beings that belong to the *Homo sapiens* species are persons. They may have the potentiality but they do not always have the capacity.

Harris very carefully draws the distinction between these two terms that sound almost synonymous. Capacity is ‘can’ and potentiality is ‘could’. “I can speak English” means that I have everything required in order to learn and speak a language (mouth, tongue, vocal chords, functioning brain, etc.) and also the knowledge of the English language. Whether I wish to exercise this capacity of mine at the moment or not, is of no importance. If I never speak English then I may forget it, which means that I will lose my capacity to speak English. But if I frequently practice my English, this means that I *can* speak English even if I do not always do so. Now, if we replace all the ‘can’ from the previous sentences with ‘could’ we are talking about a potentiality. “I wish I could speak English”. This sentence reveals a potentiality and a

⁴³ Harris, *The Value of Life*, p. 20.

⁴⁴ Harris, *The Value of Life*, p. 21.

lack of capacity. I might have everything required to learn a foreign language but I do not have the knowledge yet.

Potentiality means ability that has not been actualised; present lack of skills and knowledge. For that reason Harris argues that we should not treat people with potentials like people with capacities. A fifteen-year old secondary school pupil wants to become a pilot. She has the potential to become one but she is not yet a pilot; she lacks the capacity, i.e. the skills and knowledge. It would be very stupid of her to apply for a job as a pilot, lethally irresponsible for a company to employ her as a pilot, and suicidally idiotic for someone to agree to be on a flight with her as a pilot. This example shows that regardless of people's potential to do *X*, it is highly inappropriate and unintelligent to treat them as if they already have the capacity to do *X*.⁴⁵

iv. Human persons

A human person is a self-conscious human being with the capacity to value its own life and the ability to demonstrate this capacity. It is true that humans do not have this capacity throughout their lives. They acquire it at some point in their life and it is often the case that they lose it before they die. For this reason, it is very important to be able to tell when a human becomes a person and when s/he ceases to be one. This will determine what the moral value of this human is and how s/he should be treated.

An adult human being, (all things being equal) is also a human person. He is self-conscious, can recognize his own reflection in the mirror and can answer the question "Do you value your own life?" in a language that the rest of us can

⁴⁵ For potentiality see: Agamben, G., *The Coming Community*, Minneapolis, London: Minneapolis University Press, 2003.

understand. This is a very easy and straightforward case. His life is valuable and no one has the right to harm or kill this person without his consent. A temporary loss of consciousness does not result in his deterioration to a non-person level. When he is asleep, or unconscious because of an accident or disease and we know that his condition is reversible, we do not stop regarding and treating him as a person. As we showed above with the language example, the fact that someone does not always exercise a certain capacity does not mean he has lost it. Another clear-cut case is when someone is on a persistent vegetative state. By persistent we mean that there is very little or no chance of her recovering.⁴⁶ Even if she is still biologically alive, she is no longer a person since she cannot demonstrate any signs of self-awareness.

The problems with conferring personhood arise when people progressively move from one state to the other. Let us consider the case of a man suffering irreversible dementia. The difficulty about this case is that dementia is an advancing degenerative disease which affects the brain. It might take years for the person to die, and all this time he will be slowly losing his mental capacities. In this case, again, we are faced with the 'sorites paradox'. When exactly is the moment that he no longer is a person? Let us say that a doctor visits this man everyday and asks him the question "Do you value your life?" At some point the man will not be able to answer the question. From this point onwards this human being will no longer be a human person. Along with his capacity to entertain the question he will have lost the quality of personhood. Nevertheless, Harris's safety net for humans and chimpanzees could apply here. We know that these species are capable of personhood and for that it would be safer to err on their side. Hence, it would be morally better not to deprive

⁴⁶ In 2006 a paper was published in *Science* that argued that a common sleeping pill can make some people that were considered clinically dead to come back to life. See Naccache, L., 'Psychology: Is She Conscious?', *Science*, vol. 313, September 2006, pp. 1395-6.

someone even from a few days of valuable life and wait until the last sign of personhood has faded away.

Dementia is a disease that affects people close to the end of their lives. However, there are many other diseases that affect the brain and impair the mental abilities of humans which can strike from a very early age. But are these humans, persons? Again, Harris's simple test can solve the problem. Their status will depend on the severity of their condition. By that we mean their ability to somehow demonstrate that they can recognize and value their own existence. Their humanity will not give them any credits, since, for Harris, personhood is a moral quality not a biological quality. The only benefit humans can gain from their biology when it comes to personhood is the benefit of doubt or, in other words, the safety net.

For Harris the end of the being and the end of the person do not necessarily occur simultaneously. It is quite common to see the person dying first while the being is still alive but never the other way around (although this might be possible in the future, as portrayed in the common science fiction motif of uploading, where a person's mind can be transferred onto a new medium as their biological body dies, thereby preserving their personhood. e.g. Nick Bostrom's idea of transhumanism).⁴⁷ Consciousness is not sufficient to sustain personhood. What we need is self-consciousness. Even basic brain activity is not enough to morally justify treating a human in a persistent vegetative state as sacrosanct. The reason we consider the word 'person' synonymous to the word 'human' is because normally we deal with humans that are persons. It is impossible to befriend and form an equal relationship with a non-person. Nevertheless, we can come across human beings whose internal moral value is not operative. As we saw above this can happen towards the end of

⁴⁷ Bostrom, N., *Transhumanist Values*, 18/04/01, available at <http://www.nickbostrom.com/ethics/values.html>.

someone's life. Harris believes that this is what also happens at the beginning of someone's life.

v. The moral status of the human embryo

The human embryo has a very predominant position in the world of human biotechnology. Embryos are the most precious and irreplaceable organisms for scientists today. They seem to hold answers to many of the problems humanity faces; from infertility to Alzheimer's Disease the treatment lies somewhere in those microscopic beings. Embryos are the scientists' wonderland. For this reason the question about the moral status of human embryos is of great importance. Harris believes that human embryos do not have the same moral status as persons. This is a conclusion easily drawn from what we have said so far, but let us see in more detail how his argument develops.

Harris sees two reasons why someone could consider embryos morally worthy; one would be for what they are and another for what they will become (capacity versus potentiality). Let us start with the first one (capacity). The embryo *is* a living member of the human species right from the time of conception and, for that reason, morally valuable. Harris believes this proposition to be false. First of all life does not actually begin at conception, because as he says, life never ends. 'Life is a continuous process uninterrupted from generation to generation continuously (or at least sporadically) evolving.'⁴⁸ The ovum is alive and the sperm is alive and they are both of human origin, yet we do not think of attributing direct moral value to them. Individual human life does not begin at conception either. The fertilizing egg can

⁴⁸ Harris, 'In Vitro Fertilization: Ethical Issues (I)', p. 222.

grow to be a cancerous tumour, which can threaten the mother's life. We do not believe hydatidiform moles to be persons. Even when we are considering a 'successful' fertilization, we know that the zygote will eventually divide into an embryo and a trophoblast. The embryo will grow to become the foetus and then child, whereas the trophoblast will become the placenta and the umbilical cord that will support the foetal life up to the day of its birth. Then, placenta and cord will be discarded. It is important to note that '...the trophoblastic derivatives are alive, and human, and have the same genetic composition as the foetus.'⁴⁹

Another possibility is that the zygote instead of leading to the beginning of one individual life, might result in the creation of two individuals. This is called embryo splitting and is the way monozygotic twins are formed. This splitting can happen even two weeks after conception. All these examples make the propositions "Human life begins at conception" and "The life of a human individual begins at conception" problematic. If we think that what matters morally is human life then we are obliged to protect every single sperm and egg and every human cell and tissue. And this is an absurd conclusion (*reductio ad absurdum*).

Consequently, the embryo cannot be morally valuable for what it is. The other way to prove its value is by looking at its characteristics and capacities. The early embryo is a cluster of cells. In a week's time the zygote will go through numerous divisions and it will develop into a blastocyst (a cell mass of 50-100 cells). The outer layer will form the placenta and the inner part will become the foetus. At this stage this human being is nothing more than a tiny ball of perfectly identical cells, no bigger than the head of a pin. It is not sentient and has no other capacity than the capacity to

⁴⁹ Jones, H., W. Jr., 'The Ethics of In Vitro Fertilization ~1981', in R. Edwards and J. Purdy (eds.), *Human Conception In Vitro*, London: Academic Press, 1981; Harris, *Clones, Genes and Immortality*, p. 47, ft. 9.

develop into a foetus. This sole capacity though is not enough to make the embryo morally important.

Thirteen to fourteen days after conception, the first signs of the primitive streak, which will become the foetus' central nervous system, appear. This is the first sign of cell differentiation and from this point onwards embryo splitting can no longer occur. There is still, however, no great moral difference between this stage and the previous one. Within eighteen weeks the foetus is fully formed. Most of its major organs are functioning and it starts responding to external stimuli like light, changes of temperature, sounds, etc. It can even recognise its mother's voice. Again as Harris notes this could be the description of almost any adult member of the animal kingdom. And it is true that '...many millions of such creatures appear on the dining tables of those who protect human embryos, and millions more are used for experimental purposes'⁵⁰. If we value these characteristics so much, then we should stop exploiting animals.

Nevertheless, we still think that human embryos are more important than animals. Two reasons can justify this belief; first, that humanity gives them a *de facto* moral value, and/or second, that their potentiality to become persons allows them this privileged treatment. The first option bears the evil of -ism –speciesism in this case– from which Harris maintains that the term 'person' should be disentangled. He declares that 'what makes racism or sexism wrong is not the simple fact that members of different races or genders are members of the same species but rather that there are no morally relevant differences between them.'⁵¹

The second reason has to do with the potentiality argument. We illustrated before that Harris thinks it is absurd to treat someone as *X* before he or she actually

⁵⁰ Harris, *Clones, Genes and Immortality*, p. 48.

⁵¹ Harris, *Clones, Genes and Immortality*, p. 49.

becomes *X*. 'We are all potentially dead, but no one supposes that this fact constitutes a reason for treating us as if we were already dead.'⁵² A counter argument could go like this: The human embryo is a potential human person. We think that human persons are morally valuable. Unless we save the embryo today, there will be no person in the future to value. For that reason we have a moral duty to protect human embryos.⁵³ Even though this sounds logical, Harris senses that if we were to go down this way, we would find ourselves in a very exhausting and impossible situation. If we agree to value and protect everything that - given the right conditions - can become a human person, then we are obliged to save every single human sperm and fertilize every single human egg. We should commit ourselves to find a way that will stop natural miscarriages from occurring and, of course, we should make abortion illegal. In the future, if cloning becomes a safe artificial reproductive technique, we should dedicate our lives in trying to clone every single cell in our bodies because, given the right condition, they can all become human persons. Again, what initially seems to be a logical argument ends up an absurd conclusion. With this reasoning Harris dismisses the potentiality argument, leaving its proponents with no apparent emergency exit.

⁵² Harris, *Clones, Genes and Immortality*, p. 50.

⁵³ Don Marquis is one of the proponents of the 'Future of Value Argument' and he argues that it is immoral to kill embryos and fetuses on the grounds that we deny them a valuable future. See Marquis, D., 'Why abortion is Immoral', *Journal of Philosophy*, vol., 86, no. 4, April 1989, pp. 183-202.

Mary Warnock's 'Individuals'

Although extremely influential, John Harris' theory on persons and personhood was not the only one that emerged from the world of secular ethics. Many philosophers working on this particular area of ethics criticised Harris' utilitarian point of view and proposed an alternative theory about persons and the moral status of human embryos. One of these thinkers is Dame Mary Warnock, former Chairman of the Human Fertilization and Embryology Authority. The Committee began in 1982 the enquiry into the social, ethical and legal implications of recent and potential development in the field of human assisted reproduction. The report was presented in 1984 and after that Warnock published various books and articles in the area of cloning, assisted reproduction and embryonic stem cell research. Also a brief, but nevertheless interesting correspondence on the issues of persons and personhood took place between her and John Harris in the mid 80s.

The correspondence began with John Harris's article in *The Philosophical Quarterly* in 1983 with the title 'In Vitro Fertilization: The Ethical Issues (I)'. He discussed the issue of *in vitro* fertilization and the new possibilities opening in the field of biotechnology, e.g. stem cell therapy⁵⁴, he offered his own account of the terms 'person' and 'personhood', and he explored the moral status of the human embryo. This article worked as an introduction to the book Harris published two year later *The Value of Life*. Mary Warnock immediately responded to Harris by publishing an article in the same journal and issue under the same title 'In Vitro Fertilization: The Ethical Issues (II)'. Warnock felt that Harris was trying to offer

⁵⁴ Harris, 'In Vitro Fertilization: The Ethical Issues (I)', p. 221-2.

advice to and create guidelines for philosophers and ethicists working in the public sphere, and since she was one of them, she thought she should present her view.

What really intrigued her was Harris's method of defining persons. She thought the use of the term 'person' and 'personhood' to be redundant and confusing. Harris proposed several criteria of personhood and examined human and non-human beings to see if they fit the criteria. Warnock argued that personhood is not *a matter of fact* but *a matter of value*. When one asks "Is he or she a person?" what one really means is "How should I treat him or her?" and this is a question that no analysis or examination is able to answer. Warnock also disagreed with Harris's idea of speciesism. She proclaimed that is not unethical for humans to show some preference and try to protect their fellow humans. On the contrary '[T]o live in a universe in which we were genuinely species-indifferent would be impossible, or if not impossible, then in the highest degree undesirable.'⁵⁵

The Warnock Report came out in 1984 and Harris's book *The Value of Life* a year later, in 1985. Harris dedicated a part of his book to address the Committee's decisions and Warnock's personal ideas on persons, human embryos and slippery slope arguments. It was Warnock's turn to speak and in 1987 she published an article in the journal *Bioethics* titled 'Do Human Cells Have Rights?' Right from the beginning it becomes quite clear that she aimed to respond to Harris's last criticism. 'Some people have sought to answer this question by raising a further question, namely whether the early embryo is a person or not'⁵⁶. In fourteen pages she tried to explain why a factual understanding of personhood creates more problems than it seeks to solve and why experiments on human embryos after the fourteenth day should not be allowed. The exchange on this issue continued with no major surprises

⁵⁵ Warnock, 'In Vitro Fertilization: The Ethical Issues (II)', p. 242.

⁵⁶ Warnock, 'Do Human Cells Have Rights?', *Bioethics*, p. 1.

in the next publications of Harris and Warnock. The occurrence of Harris's ideas in Warnock's writing and vice versa became a common place. As expected, neither Harris nor Warnock were convinced by the other's arguments. It was left to the reader to decide whose arguments were more persuasive and whose ethical system was the strongest.

i. What is a human being?

In the Report of the Human Fertilization and Embryology Authority in 1984, also known as Warnock Report, we read: 'It was the development of IVF that, for the first time gave rise to the possibility that human embryos might be brought into existence which might have no chance to implant because they were not transferred to a uterus and hence had no chance to be born as human beings.'⁵⁷ Initially, this statement looks correct. It merely describes a common truth; since human embryos cannot survive and develop outside of the womb, those that will not be implanted will not be born. On a second look though, this sentence seems to introduce a biological distinction between human embryos and human beings. It appears that the human embryo cannot be regarded as a human being unless it completes its nine-month (sometimes less) development inside a womb and then enters the world by birth. The definition of a human being, then, is an existing creature, product of the union of human gametes (human sperm and human oocyte) born by a human female being.

It appears that for Warnock the adjective 'human' in front of the word 'embryo' only indicates the origin of the embryo. It tells us that the progenitors of this embryo are humans and not dogs or monkeys. Even though there is a correspondence

⁵⁷ Warnock, *A question of life*, p. 60.

between the origin of human embryos and that of human beings, even though they both are members of the same species, these two organisms do not belong to the same moral or even biological category. But what exactly is an organism? Let us look at some definitions of the term 'organism'. An organism is 'an organic structure', 'a whole with interdependent parts, compared to living being; an organic system', or 'an individual animal, plant, or single-celled life form.'⁵⁸ According to these definitions both the born human being and the human embryo qualify as organisms. They are living individual beings, they carry DNA, they are capable of growth by cell replication, and also have the ability to function independently. And if we follow a very simple syllogism we can see that human organism = human being = human (noun). It seems logical to follow the same syllogism for the human embryo, i.e. human embryo = human organism = human being = human. However, this is not the case for Mary Warnock. For some reason we cannot derive 'human' from 'human embryo'. The line has a fault somewhere.

One could question the independency of the human embryo. We know that the embryo is totally dependent on the mother who is carrying it for its development and growth, and it is incapable of surviving outside the womb. This is the case, however, for all organisms. From the unicellular to the most advanced vertebrates, living beings need the right environment in order to live and flourish. Adult human beings, if they find themselves in an inhospitable environment with no oxygen, will die. Hence, the level of dependency on the environment cannot be a reason why human embryos do not qualify as human beings.

Maybe the problem is the different levels of complexity. A born human being is a highly developed organism with a very complicated level of organisation, where

⁵⁸ Oxford English Dictionary, edition 2008.

the embryo is a much simpler and uncomplicated one. In an infant, most of his/her organs function properly and collaborate with each other forming finely-tuned systems (e.g. respiratory, digestive, nervous system, etc.). A human embryo, especially during the first few days, is a loose cluster of identical cells. It is only after the fourteenth day that differentiation begins and higher levels of complexity emerge.

A human organism is a human being, i.e. is a human. This is a very simple syllogism but it does not account for human embryos. A human embryo is a human organism, it is of human origin, but it is not *a human*. Mary Warnock believes that since '[v]ery early embryos are frequently lost by spontaneous abortion without its ever having been recognised that they existed. Just as eggs and sperm are lost all the time, without our mourning'⁵⁹ so, early embryos and fully formed human beings cannot share the same status. The human embryo seems to share the same status with a human organ, or even with a human cell.

ii. What is a person?

Mary Warnock believes that the question "What is a person?" and the concept of personhood is difficult and ambiguous. Trying to answer this question creates more difficulties than it solves, most of the time. She believes that the problem lies with the misconception of this question as a question of fact and not of value. 'Although the questions of when life or personhood begin appear to be questions of fact susceptible of straightforward answers, we hold that the answers to such questions in fact are complex amalgams of factual and moral judgements.'⁶⁰

⁵⁹ Warnock, M., *Religion Morality and Human Reproductive Technology*, Oxford: Farmington Institute for Christian Studies, Harris Manchester College, 1998, p. 4.

⁶⁰ Warnock, *A question of life*, p. 60.

If we need to decide on who is a person and who is not, we have to produce criteria upon which we can base this decision. Some criteria are valid and lead to morally acceptable conclusions and some are invalid and result in morally unacceptable ones. In her article 'Do Human Cells Have Rights' she examines a number of such criteria. Bad criteria, she thinks, are the ones that depend on disputable factors such as the norms of a society or feelings of other people. 'If among the criteria for personhood were that the human in question should not be a war captive, for example, it would result in the consequence, acceptable to the ancient Romans but not to us, that humans captured in war could be owned by their captors and would have not rights.'⁶¹ For the second category, she borrows an example from W. A. Silverman.⁶² 'To take another example, there is a school of paediatricians who, wanting to know whether to strive to keep a neonate alive, they try to find out whether his parents *want him to live*. [...]. It is easy to imagine how senile and dependent adults might fall into such a category. I think that if a criterion of Personhood is suggested, it must be allowed to hold generally; and this particular criterion of being wanted must be rejected for its general consequence.'⁶³

Then she goes on to examine John Harris's criteria for personhood. She acknowledges that his criteria are less disputable compared to those of Silverman, because he is referring to characteristics '*...a creature must possess in himself*.'⁶⁴ She focuses mainly on the criterion that the creature must be able to value his or her own life. She believes this to be subject to two different kinds of interpretation that make it either too inclusive or too exclusive. If we are to interpret the instinct of survival as ability to value one's own life, then every living creature, from an amoeba to a human

⁶¹ Warnock, 'Do Human Cells Have Rights?', p. 2.

⁶² Silverman, W. A., 'Mismatched Attitudes about Neonatal Death', *Hastings Centre Report*, vol. 11 (6), pp. 12-16.

⁶³ Warnock, 'Do Human Cells Have Rights?', p. 3.

⁶⁴ Ibid.

being, seems to be a person. On the other hand if the creature must be able to use language then a large proportion of humanity is excluded.⁶⁵ She maintains that similar difficulties arise whatever the criteria; hence the only way to deal with this problem is to bypass the concept of the person altogether.⁶⁶

It is true that nowhere in her writings does Warnock give a specific description of what she thinks personhood (a person) is. She does believe that persons have rights – at least moral rights that can be mirrored in legal rights – and the only characteristics that she seems to attribute to persons are humanity and individuality. We can safely extrapolate this conclusion from her discussion about the distinction between human embryos and pre-embryos that follows.

iii. Human beings that are not persons and persons that are not human beings

Mary Warnock, unlike John Harris, believes that humanity is a characteristic of personhood. 'Far from being arbitrary it is a supremely important moral principle. If someone did not prefer to save a human rather than a dog or a fly we would think him in need of justification [...] To live in a universe in which we are genuinely species indifferent would be impossible, or if not impossible, in the highest degree undesirable. I do not therefore regard a preference for humanity as 'arbitrary', nor do I see it as standing in need of further justification than that we ourselves are human.'⁶⁷ Harris contends that this anthropocentricity is an impulsive and capricious preference, a dangerous speciesism that could lead us to immoral actions, i.e. unjustifiably favour

⁶⁵ Actually, this is not a problem for Harris. For him being a human does not have a moral value.

⁶⁶ Warnock, 'Do Human Cells Have Rights?', p. 3.

⁶⁷ Warnock, 'In Vitro Fertilization: The Ethical Issues II', p. 238.

members of our own species against persons that belong to different species. On the contrary, Warnock upholds the idea that is perfectly reasonable to support and protect fellow humans, and give them priority over other species (dogs, for example). Her motives are not based just on intuition and/or sentimental morality, to use one of Harris's terms, but on her own definition of person.

As we saw Warnock rejects a functionalistic idea of personhood where a list of characteristics is displayed and a test is run to decide which creature can tick all the boxes and consequently, can be awarded the title 'person'. Personhood is not a biological term; rather a moral one and for that, she believes, the decision cannot be a matter of facts but a matter of values. She takes every human individual to be a person. What needs to be demonstrated is when exactly during the process of human development we are faced with an individual. Although she holds that personhood is not a factual term that can be determined by looking at a creature through the microscope, Warnock turns to the science of biology in order to answer this question. 'Before fourteen days from fertilization, we (the Committee of Enquiry) argued, the embryo is not really one thing, but a loose collection of cells that have not yet differentiated (often referred to as the pre-embryo). Any one of these cells may take on any role when the embryo forms, or may become part of the placenta, rather than of the embryo itself. The cells are totipotent. Moreover for up to fourteen days it is possible that twinning will take place, and that there will be, if normal development occurs, two individuals who are born, rather than one. It is therefore difficult for me, or anyone else, to trace my origin as an individual back beyond the fourteen-day stage to the stage when I might have been two. Who, which of the two, would 'I' be?'⁶⁸

⁶⁸ Warnock, *Guide*, p. 43.

Warnock maintains that being a 'human being' is not a sufficient reason for personhood. Being a 'human individual' is what counts. Of course, her system is much more inclusive, especially when it comes to humans, than Harris's one. Nonetheless, there is still a small proportion of humanity that fails to find a place in the club of persons and secure a human moral status. A pre-embryo carries a lot of uncertainties as to whether it should be allowed to count as an individual. It can become one or two fetuses; half of it will be the placenta and half of it the baby. Or it can grow into a carcinogenic mole. All these open possibilities do not allow the pre-embryo to acquire moral significance. Other members of the Committee also supported this argument: 'It is simply a collection of cells which, unless it implants in a human uterine environment, has no potential for development.'⁶⁹ Based on these grounds Mary Warnock holds the idea that all human beings from the fourteenth day of their existence until the end of their lives are human persons with full moral rights and subject to legal protection, whereas the pre-fourteen-day human being cannot fall into this category. Research that will result in the killing and destruction of these pre-embryos is not either illegal or unethical. No harm is done to persons; what has been destroyed is a loose cluster of cells with an uncertain future.

Consequently, even for Warnock, there can be human beings that are not persons. What about persons that are not human beings? Nowhere in her writings does Mary Warnock entertain this question. It is only in her article 'In Vitro Fertilization: Ethical Issues (II)' where she dedicates few lines to this question. 'I am not persuaded by arguments that turn on the question 'How would you treat intelligent beings from other planets?''⁷⁰, she replies to Harris's argument against speciesism. Whether she believes that it is impossible for non-humans to reach the level of personhood,

⁶⁹ Warnock, *A question of life*, p. 62.

⁷⁰ Warnock, 'In Vitro Fertilization: The Ethical Issues (II)', p. 242.

terrestrial or extra-terrestrial, or that this is an empty question that should not worry us - since, in this world, humans are the only species that can possess personhood - is not very clear. Nevertheless, what she seems to imply is that she would not propose or support the destruction of a friendly non-human, alien species that could demonstrate personhood simply on the grounds that they are not humans.⁷¹ On the other hand, she would not allow humankind's destruction by aliens, either. 'If such beings exist and if one day our descendants come to know them, then the question of how our descendants treat them might well turn on the new creatures' concept of the human race. If both species were equally aware of the other's right to exist, then doubtless it would be time to negotiate, and a contract of equal rights might be drawn. But as to all that, I am prepared to wait and see.'⁷²

iv. Human Persons

A human person, for Mary Warnock, is every human individual after the fourteenth day of fertilization. No other characteristics are required apart from the ability to tell that this being is a unique human being. Warnock acknowledges the counter-argument that the individual human being exists right from the first day of fertilization since all the potentials of personhood are already there. 'It is sometimes argued against this that the individual human must exist before the appearance of the primitive streak, because all of the genome, the complete set of the hereditary factors of the embryo, is

⁷¹ B. Williams also discusses this issue. He argues that being human is an 'ethical concept we already have. This is the ethical concept that is at work when, to the puzzlement of the critics, we afford special consideration to human beings because they are human beings. The fact that we implicitly use this concept all the time explains why there is no other set of criteria which we apply to individuals one by one.' p. 150. Also he argues that in case of an alien invasion, humans would be justified to protect themselves and their culture. Williams, B., 'The Human Prejudice', in *Philosophy as a Humanistic Discipline*, Princeton, N.J.; Oxford: Princeton University Press, c2006.

⁷² Warnock, 'In Vitro Fertilization: Ethical Issues (II)', p. 242.

already in place from fertilization onwards. But this argument suggests that an individual human is nothing except his genome. This cannot be true. For one thing, the whole genetic make-up of a person can be discovered from a small bit of tissue, or a drop of saliva, yet we do not think of these as *being* the person. Moreover it is his whole developing body and brain which distinguishes him from other individuals. Even identical twins, whose genome is shared, develop differently from one another at the level of the functioning and thus the development of their brains. It is perfectly consistent, therefore, to hold, that although the genetic factors in an individual's development may be given at the zygote stage (that is the one-cell stage immediately following fertilization of egg and sperm), the individual himself has not yet come into being.⁷³

This position still leaves the question of why the potentiality that exists in a pre-embryo is so fundamentally different from the potentiality in an embryo. Warnock distinguishes between the potential *of* an individual and the potential *to become* an individual.⁷⁴ Theoretically every single sperm and every single egg have the potential to become an individual under the right conditions, i.e. if fertilized. The remote but existing possibility of parthenogenesis also opens another possibility for the human ovum to become a human person. Artificial reproductive techniques and especially cloning, if used, would be able to turn every cell of our body into a new person. The possibilities are endless. Such a theory could lead us to an irrational conclusion; if we were to respect and protect everything that has the possibility of becoming a human person, then we had to save every living cell of our body. This could make our lives unbearable.

⁷³ Warnock, *Guide*, p. 43.

⁷⁴ Harris, *Clones, Genes, and Immortality*, p. 50.

On the other hand if we are to respect the potential of an individual then we can avoid such a pitfall. Every human being is entitled to protection and respect. The post-embryo, as we explained above, is an individual human being with great potentials. Differentiation has started, the primitive streak has been formed and from the fourteenth day onwards we can safely refer to a single, unique individual that is developing in the protected environment of a natural - or artificial, if they become available⁷⁵ - womb. It is true that many accidents can happen during the nine-month period of gestation which may result in the death of the embryo, but all the same, accidents can happen at any time during anyone's life. What is of importance is that after the fourteenth day we detect the growth of a unique human being. Everything that happens from this day onwards will uniquely affect this particular person's life and form his or her appearance and character. In her book *Making Babies* Warnock supports the Committee's decision to differentiate between pre-and post-embryos:

'The Bill drew a distinction between the embryo before and after fourteen days from the time when fertilization was established in the laboratory. Before fourteen days, the embryo, or pre-embryo as it was scientifically known, was a loose cluster of first two, then four, then sixteen cells, undifferentiated. An undifferentiated cell could develop into any of the types of cell that go to make up the human body, and some of them would not become part of the embryo at all, but would form the placenta. After fourteen days, there begins to appear the first traces of what will become the central nervous system of the embryo, the primitive streak (or the primitive streaks, since at about this time identical twins may be formed). From this time the cells develop into their particular types, and the embryo develops fast into a recognisable foetus (or foetuses). There are therefore good scientific reasons for distinguishing between an embryo before fourteen days, when it can hardly be referred to as a human individual, and an embryo after this stage.'⁷⁶

⁷⁵ Location is not morally relevant. Artificial wombs might be available in the near future. Knight, J., 'Artificial wombs: An out of body experience', *Nature*, vol. 419, 2002, pp. 106-107; McKie, R., 'Men Redundant? Now we don't need women either', *The Observer*, 10/02/02, viewed on 10/05/05 <http://www.guardian.co.uk/world/2002/feb/10/medicalscience.research>.

⁷⁶ Warnock, M., *Making Babies: Is there a right to have children?*, Oxford: Oxford University Press, 2002, p. 35.

So, after the hallmark of the fourteenth day, when all uncertainties about the future of this ball of cells called pre-embryo disappear we are certain that what we are dealing with is a human person.

v. The moral status of the human embryo

Mary Warnock believes that the question of when life or personhood begin and what the moral status of an embryo should be are extremely puzzling and there can never be straightforward answers, but only a complicated synthesis of facts and moral beliefs. A way to overcome this unanswerable issue, she suggests, is to phrase the question differently. What we should enquire is not what the components of personhood are, whether embryos are persons or not, or when life begin. Instead what we should ask is what is the correct way to treat the human embryo. The answer should be tuned with the physiological evidence science offers, but be mainly based on moral and ethical principles. 'It would be much clearer and less misleading if people asked at what stage an embryo becomes morally significant; or at what stage we ought to start to treat a human embryo as we treat other human beings. It would then be clear that no further scientific knowledge would settle the question [...] Of course the science of embryonic development [has] a bearing on the moral decision that [has] to be taken.'⁷⁷

⁷⁷ Warnock, *Guide*, pp. 45-46.

Concluding Remarks

According to Harris, human embryos fail to demonstrate a sufficiently satisfying reason for considering them as persons. They fail his test of self-awareness. They have no capacity to entertain the question “Do you value your life?”, they cannot rely on the fact that they are of human origin for protection and they cannot use their potential for personhood as an excuse either. For all these reasons human embryos cannot be awarded with intrinsic moral value comparable to that of persons. So, this is *not* the moral status of human embryos. Do they, though, have any kind of moral significance? Harris says that ‘...certainly it does not follow from our conclusion that there is nothing morally wrong with killing an embryo that there is nothing morally wrong with doing other things to or with it.’⁷⁸ Most of us think it is morally wrong to inflict pain on sentient animals even if they are to be killed for food or used for experiments. Again, the embryo cannot feel pain for probably up to eighteen weeks of gestation because its nervous system is not sufficiently developed. Even when abortions are performed at a stage where it is likely for the foetus to experience pain the Royal College of Obstetricians and Gynaecologists requires administration of potassium first in order to stop the foetal heart.

Morally wrong is also to purposelessly discard or destroy an embryo, when there are people that can benefit from it. We warmly support organ donation and organ transplantation and we believe to be immoral to throw away a healthy human liver when there is a person dying from liver-failure in the next room, for the reason that we should always commit ourselves to save and protect a valuable life. Almost

⁷⁸ Harris, *The Value of Life*, p. 117.

170,000 abortions are performed every year in the United Kingdom on the grounds that it is necessary for the mother's health and well being. Under the same principle usage of, and experiments on embryos that will result in the preservation of the lives and promotion of the health of numerous persons, present and future, should be ethically praiseworthy and morally permissible.⁷⁹

Harris thinks '...that at no stage of its development through to the end of the third trimester of gestation and beyond does the developing human individual acquire those features that make its moral significance comparable to that of normal adult human beings - that in short make it a person.'⁸⁰ The early embryo does not differ from any other sort of human tissue and the late embryo, foetus and even new born child, according to this reasoning, is not more important than an animal. While the human embryo does not have any direct moral value, it can acquire an indirect one when it can somehow help and promote the health and the well being of persons. Their significance lies with their level of usefulness for us.

Warnock believes that the moral status of the human embryo is determined by what we believe is the ethically correct way to treat them.⁸¹ She acknowledges that there is no universal ethical law and that it would be very difficult to find two people who agree on their moral principles. Therefore what she is aiming at are not absolute ideas, but acceptable ideas: "Acceptable" is a favourite word with civil servants. At first I tried to eliminate it from all discussion of our report, because I thought it a mealy-mouthed compromise of a word, employed solely to avoid the words "right"

⁷⁹ Harris, J., 'Embryos and hedgehogs: On the moral status of the embryo', in Anthony Dyson and John Harris, (eds.), *Experiments on Embryos*, London, New York: Routledge, 1990, pp. 65-81 (79).

⁸⁰ Ibid.

⁸¹ What does she mean by 'our'? Who are to decide which values are better than others? She acknowledges the problem that different people might have difference values in *Religion Morality and Human Reproductive Technology* (p. 5) but she does not offer an answer.

and “wrong”. But I came to realise that acceptability in the sphere of public morality and law is a necessary concept.’⁸²

The moral status of the post-fourteen days embryo that she believes most people will be ready to accept is that of a human person. The life of the embryo should be respected and protected the same way the life of a child is. No research should be permitted on embryos after the fourteenth day. This decision, Warnock trusts, reflects the morals and sentiments of the majority (at least) of the people and these values have rightly found their way to the law. ‘Maintaining an embryo alive, unfrozen for longer than fourteen days is a criminal offence, with penalties of up to ten years’ imprisonment. The law thus deems that the embryo undergoes a dramatic change of status after fourteen days from fertilization (not counting as relevant any day during which the embryo is frozen), thereafter being protected from use as a research-object almost as rigorously as a child is protected.’⁸³

On the other hand, the life of the pre-embryo does not fall into the same category. The early embryo is not regarded as a person and its life is not valued or protected. She believes that this is in concordance with moral values that the majority of the population holds or accepts. Research using human embryos is permitted, even though this means that embryos will be created and destroyed for the sole purpose of knowledge-gain and the prospect of developing future treatments. The benefits that will come with the advanced knowledge on embryonic life in treating infertility and various diseases are too important to be ignored. What is being destroyed is not a person; thus pre-embryos do not have any weight in the cost-benefits analysis.

Mary Warnock believes that if we could proceed without trying to find an answer to the question of personhood, and instead focus only on how the majority of

⁸² Warnock, *Religion Morality and Human Reproductive Technology*, p. 1.

⁸³ Warnock, *Guide*, p. 42.

people would accept to treat other creatures, then we could more easily come to a conclusion about the moral status of beings, as well as the enactments that will reflect this conclusion. One cannot fail but ask whether morality can be democratic. It is questionable though, whether such an important decision should depend on the outcome of a referendum. I believe that a referendum would fail to demonstrate what is ethical and what is not. What it could demonstrate to us is just a statistical representation of what society believes to be right or wrong. Ethical laws cannot be based on an average. People's ethical beliefs can vary enormously, even within the same society. Mary Warnock seems to recognise this point, but still manages to contradict herself when she is proclaiming the benefits of "acceptability". As we saw above, in her article 'Do Human Cells Have Rights' she listed society norms and personal feelings among the bad criteria for ethical decisions. What other than societal norms and personal feelings will a referendum reveal? Attempting to find the middle ground would probably aid in placating the public, but it would not necessarily help us on the ethical domain. Perhaps this is the right way to proceed when there is a need for legislation. Nonetheless, we know that what is legally correct and what is morally correct do not always coincide. Perhaps a referendum can be a useful tool when trying to form laws, but it cannot be when trying to debate ethics.

Both Harris and Warnock proclaim that their ethical theory depends on rationality and reflects the moral belief of modern secular society. Harris is much bolder in his statements. With a logical syllogism he is drawing clear lines between persons and non-persons and he challenges common intuitions on the issue of the moral superiority of humanity. Despite the logical progression of the argument, Harris' view is not irrefutable. On the other hand, Mary Warnock feels the weight of her position as Chairman of a state committee and that reflects on her views and

positions. She recognises that these are very delicate issues. She understands that rationality alone cannot resolve ethical questions. Morality also depends on intuition, personal beliefs and deeply-rooted preconceptions. Warnock manages to balance logic and intuition on the topic of research on human embryos by introducing a new term; the pre-embryo. By distinguishing the embryonic life in pre- and post- she finds a way to justify embryo research without insulting people's belief on the moral value of human life. Yet, as we saw, her theory is not without problems either.

In the next chapter we will examine the theory proposed by the Christian theologian and philosopher Tristram Engelhard Jr. He was one of the first theologians/philosophers that recognised the need for theology to enter the bioethical discussion. Yet, he believes that in order for a contemporary society to function properly belief and logic should be kept separate. What he suggests is a two-sided ethical theory one for the person as a believer and one for the person as a citizen.

Chapter 4

H. TRISTRAM ENGELHARDT

PERSONALISM FOR ‘STRANGERS’

AND

HOLISM FOR ‘FRIENDS’

Introduction

The previous chapter focused on the moral theories and anthropological ideas of two major secular ethicists, John Harris and Mary Warnock. The former holds to a ‘personalist’ view and argues that only persons can be the bearers of full moral status. Human embryos have no direct moral worth and therefore it is not unethical to use them in biomedical research. The latter, also argues for the moral permissibility of using

human embryos in biomedical research. Her justification for this conclusion, however, is somewhat different to that of Harris'. Warnock supports an 'individualist' position. According to this view only human individuals have irreducible and inviolable moral value. One becomes a human individual from the fourteenth day of gestation onwards. Before this point one has no direct moral value and therefore the use of pre-fourteenth day embryos in biomedical research is morally unproblematic. We now turn to a bioethicist with a strong theological background. We will examine his ethical and anthropological position and we will look at the way he believes secular and religious communities should interact in a contemporary multicultural society.

Christian theologians and philosophers with theological background were the first to be concerned with bioethics. Notably the two most influential figures in the first generation of bioethics were theologians: Joseph Fletcher¹ and Paul Ramsey². Particularly, the question of the moral status of the human embryo and in extension of the moral value of human life directly relates to fundamental Christian beliefs regarding the creation and the origin of mankind. Within the Judeo-Christian tradition the moral value of human life has been unambiguous. Humans bear the divine Image (*Imago Dei*) and this belief gives them inviolable dignity as persons. There are Christian thinkers who argue from within the Christian tradition and defend this fundamental doctrine³. Others recognised that fundamental theological language could not become understood and it

¹ Fletcher, J., *Morals and Medicine*, Princeton, NJ: Princeton University Press, 1954.

² Ramsey, P., *Fabricated Man: The Ethics of Genetic Control*, New Haven, CT: Yale University Press, 1970; Ramsey, P., *The Patient as a Person: Explorations in Medical Ethics*, New Haven, CT., Yale University Press, 1970; Ramsey, P., *Ethics at the Edges of Life: Medical and Legal Intersections*, New Haven, CT., Yale University Press, 1978.

³ For example: Breck, J., *The Sacred Gift of Life: Orthodox Christianity and Bioethics*, Crestwood, NY: St. Vladimir's Seminary Press, 2000.

would fail to be influential and convincing in a secular world. Thus, they tried to accommodate their views to the secular bioethics.⁴

Hugo Tristram Engelhardt Jr. is a unique figure in the area of Christian bioethics. He is a philosopher with a medical background and of Christian Orthodox faith. He holds full professorships for both medicine and philosophy and he has been a strong voice for Christian views in the area of bioethics. His expertise in all fields that comprise the area of bioethics, and particularly Christian bioethics, make him a key figure concerning this discussion. H. T. Engelhardt is also libertarian. When most theologians are either trying to introduce and maybe incorporate Christian ideas into mainstream bioethics he believes that secular and religious ideas should be kept separate in a contemporary society. Secular ethics can only be utilitarian and consequentialist. Christian bioethical ideas can only exist within a purely Christian environment. It is this stance that mainly differentiates him from the other Christian bioethicists.

Engelhardt published his first major book in bioethics in 1986 titled: *The Foundations of Bioethics*.⁵ In this book he presents the secular bioethical system. He describes the special moral status of persons and their role for achieving a peaceable community. He explains why personhood characteristics and not humanity is what matters morally and, consequently, why infanticide and experimentation on embryos, fetuses and the severely demented can be justifiable. He notes the impossibility of arguing for a Christian bioethics based purely on reason and he stresses his point that Christian and secular ethics could never meet. In 1991 in his book *Bioethics and Secular*

⁴ For example: Cole-Turner, R., *The New Genesis: Theology and the Genetic Revolution*, Louisville, KY: Westminster/John Knox, 1993; Ford, N., *The Prenatal Person: Ethics from Conception to Birth*, Oxford: Blackwell Publishing, 2002.

⁵ Engelhardt, H. T., *The Foundations of Bioethics*, New York, Oxford: Oxford University Press, 1986.

Humanism, he reprised his view that reason cannot solve ethical problems in a secular and multicultural society.⁶ He suggested that a basic ethical system and mutual consent could only secure a peaceable community among moral strangers, namely people with different ethical viewpoints.

Engelhardt also addressed the issues of bioethics from the viewpoint of an Orthodox Christian theologian. In 2000 he published his book *The Foundations of Christian Bioethics*⁷. In this book he compared two political systems; liberalism and libertarianism. He argued that liberalism has failed many times to provide societies with a commonly accepted ethical system based on rationality and inevitably contemporary communities need to be organised under a libertarian system. Moral groups should be free to organise themselves in moral communities and exercise their particular ethics. He described the foundations of the bioethics for his moral friends, namely the Orthodox Christians. He stressed the profound differences between secular and Christian bioethics and he suggested a health care system where Christians will be able to translate their individual ethical beliefs into practice. He repeated his defence of libertarianism and Orthodox Christianity in various articles such as ‘Medicine and the Biomedical Sciences After God: Do Right-Worshipping Christians Know More Than Others About the Content of Morality?’⁸, ‘Medicine, Philosophy, and Theology: Christian Bioethics Reconsidered’⁹, ‘Moral Philosophy and Theology: Why is There so Little Difference for

⁶ Engelhardt, H. T., *Bioethics and Secular Humanism: the search for common morality*, London: SCM, 1991.

⁷ Engelhardt, H. T., *The Foundations of Christian Bioethics*, Lisse: Swets and Zeitlinger Publisher, 2000.

⁸ Engelhardt, H. T., ‘Medicine and the Biomedical Sciences After God: Do Right-Worshipping Christians Know More Than Others About the Content of Morality?’, *Christian Bioethics*, vol. 8 (2), 2002, pp. 209-219.

⁹ Engelhardt, H. T., ‘Medicine, Philosophy, and Theology: Christian Bioethics Reconsidered’, *Christian Bioethics*, vol. 8 (2), 2002, pp. 105-117.

Roman Catholics?’¹⁰, and ‘Moral Knowledge: Some Reflections on Moral Controversies, Incompatible Moral Epistemologies, and the Culture Wars.’¹¹

Moral Friends and Moral Strangers

Engelhardt is not trying to persuade the non-Christians, atheists and agnostics that Christianity is the only path to a moral life, but nor does he attempt to hide his religion. He advocates a socio-political system that is broad enough to accommodate the differences and the diversity found in a pluralistic society. He understands that in a post-Christian secular society, recognition and acceptance of a wide range of moral beliefs and metaphysical ideas will secure the smooth running of the society. Neither force, nor conversion, not even rational exploration could ever lead to a universally accepted substantive canonical morality. Engelhardt states: ‘The pope of Rome, many secular bioethicists, and John Rawls wish to enter the public forum under the assumption that there is a substantive canonical morality that all ought to be able to disclose through rational exploration.’¹² However, he notes that if pure reason and rational argumentation is the answer to all moral controversies, we would have reached, at least in the Western world, a moral consensus many centuries ago. ‘The difficulty is that rationality by itself is

¹⁰ Engelhardt, H. T., ‘Moral Philosophy and Theology: Why is There so Little Difference for Roman Catholics?’, *Christian Bioethics*, vol. 9 (2-3), 2003, pp. 315-329.

¹¹ Engelhardt, H. T., ‘Moral Knowledge: Some Reflections on Moral Controversies, Incompatible Moral Epistemologies, and the Culture Wars’, *Christian Bioethics*, vol. 10, 2004, pp. 79-103.

¹² Engelhardt, H. T., ‘Bioethics in the Third Millennium: Some Critical Anticipations’, *Kennedy Institute of Ethics Journal*, vol. 9 (3), 1999, pp. 225-243 (230).

instrumental, without particular content, and unable by itself to establish a particular moral understanding. The hope by reason to disclose a secular surrogate for the Western Christian moral synthesis fails.’¹³

He divides societies to moral friends and moral strangers. Moral friends are the people who share the same moral convictions, and moral strangers are those who disagree with each other on moral issues. He believes that people can form a peaceful community based on mutual consent and acceptance. ‘If one wishes to resolve moral controversies without a mere appeal to force, and if all do not listen to God as to be united in one religion, and since reason cannot disclose a canonical moral vision, the only source of common moral authority among moral strangers will be consent.’¹⁴ This is what he calls a libertarian cosmopolitan society. It is a community where people respect and secure each other freedoms, without allowing moral strangers to trespass on each other’s territories. In this community, ‘[T]he principle of permission will have centrality not because it is valued, but because the permission of persons is the only source available for secular authority.’¹⁵ Since there is not a generally accepted moral narrative and no generally accepted moral authority people become the source of authority, and the central question is which individual agreed to do what with whom. ‘This libertarian cosmopolitanism is libertarian in drawing authority from the permission of those who collaborate, and not from any particular valued state of affairs.’¹⁶

Libertarian cosmopolitanism does not offer a strong moral foundation. ‘It involves no particular ranking of values. It does not offer a content-full vision of human

¹³ Engelhardt, H. T., ‘Bioethics Reconsidered: Theory and Method in a Post-Christian, Post-Modern Age’, *Kennedy Institute of Ethics Journal*, vol. 6(4), 1996, pp. 336-341, (339).

¹⁴ Ibid.

¹⁵ Engelhardt, H. T., *The Foundations of Christian Bioethics*, p. 41.

¹⁶ Engelhardt, *The Foundations of Christian Bioethics*, p. 43.

flourishing or the good life.’¹⁷ It is necessary for people in a libertarian cosmopolitan society to place themselves in moral communities that can provide them with a structured moral guidance. However, Engelhardt notes, in recent times fewer and fewer people find themselves in such ethical communities. Nonetheless, peoples’ desire for community, value and meaning still remains. People choose to submit to a liberal cosmopolitan society that can offer them a specific moral vision rather than to a libertarian one. This shift represents an important change in the way that people think about morality. The libertarian cosmopolitan ethos does not offer a content-full vision of the good life and does not pose any criticism upon the moral decisions of individuals as long as they do not involve the coerced participation of others. On the contrary, the liberal cosmopolitan ethos offers a specific set of values, such as autonomy and self-determination and liberation from traditional norms, as the moral core of society. The existence of different and sometimes juxtaposed moral views in a liberal society can occasionally be problematic. The objective of liberal cosmopolitanism is to achieve a globalization of morality; one moral system for everybody without colour, religion, race and tradition.¹⁸

Engelhardt sees himself as member of the wide secular society and at the same time as a member of a subset of this wide society, the Orthodox Christian Church. But Christian ethics and more specifically Christian bioethics ‘...is implausible, if not morally outrageous’¹⁹ within a liberal cosmopolitan society. ‘The liberal cosmopolitan ethos grounds a bioethics that in its roots is at odds with a traditional Christian bioethics and seeks to impose its own vision through a political structure that is far from being a

¹⁷ Ibid.

¹⁸ Engelhardt, *The Foundations of Christian Bioethics*, pp. 40-45; Engelhardt, H. T., *Bioethics and Secular Humanism*, pp. 22-31.

¹⁹ Engelhardt, *The Foundations of Christian Bioethics*, p. 44.

limited democracy. The ethos imposed is one of society after the end of the Christian establishment, after the end of Christendom.’²⁰ Yet, he believes that within a libertarianism cosmopolitan ethos, secular bioethics can offer a peaceable neutral framework in which people of specific religious or other conviction would be able to exercise their own moral choices freely. Hence, he proposes two bioethical systems; one for his moral friends, i.e. the Orthodox Christians, and one for his moral strangers, i.e. everybody else. We will first examine the secular system.

The Ethical System for Moral Strangers

i. What is a human being?

The anthropology Tristram Engelhardt develops for his secular society understands the term ‘human being’ as a purely biological term. Being human means being a member of the human species. ‘First one must note that there have in fact been a number of human species within the genus *Homo*. To identify an entity as a member of *Homo sapiens* is to place it in a particular taxonomic locus. The genus *Homo* shares with the genera *Ramapithecus* and *Australopithecus* membership in the family of Hominidae of the suborder *Anthropoidea* of the order primates of the class Mammalia. In identifying an entity as human, one indicates that it possesses primate characteristics, such as long limbs and pentadactyl hands and feet, along with in increased specialization of the nervous

²⁰ Ibid.

system. With the family Hominidae one would want to note the development of tool-making capacities, language, and other symbol-related or dependent behaviour.²¹ Hence, every living being that has five fingers on each hand and five toes on each foot, is capable of using language, tools and abstract symbols; analysis of its DNA would demonstrate that it is of human origin and can be classified as a human being. If there were other beings that had thumbs and advanced nervous systems, '[H]umans would be distinguished primarily through their biological peculiarities as primates.'²² The term has no moral connotation. Unless we can demonstrate that these biological characteristics bear some kind of moral significance species membership should not be regarded as ethically important.

Engelhardt's description and understanding of the human being is very similar to that of John Harris. Both of them prefer to disrobe the term 'human being' of any social, political or ethical nuance it might have and underline the biological one. Such a distinction of meanings, even though not very important in our everyday life and everyday use of language, can be of great significance when it comes to philosophical debates on ethical issues and to practical decisions in the health-care domain.

²¹ Engelhardt, *The Foundations of Bioethics*, p. 106.

²² Engelhardt, *The Foundations of Bioethics*, p. 107.

ii. What is a person?

‘Persons, not humans, are special’, states Engelhardt.²³ He describes persons as moral beings that can conceive of the notion of a peaceable moral community, that can participate with others in this community, and have the ability to design a particular moral community with the help and free consent of others. Their special status derives from the fact that they can be justifiably praised or blamed for their decisions and actions. Such persons are not to be found only within the human race. Or to put it in other words, species membership does not add any moral significance to these beings, ‘... unless the membership results in that entity’s being in fact a moral agent.’²⁴ ‘Competent physicians and patients of any rational species anywhere in the cosmos can participate in this moral standpoint [to be able to understand what it means to justly blame or praise], which embraces not only the staff and patients of terrestrial hospitals, but also ships’ doctors and their patients on flying saucers, should such exist.’²⁵

Moral status requires and presupposes the existence of a certain level of intellectual ability, notes Engelhardt. ‘It is an intellectual standpoint in the sense that once one understands what it means justly to blame or praise, one realizes that such activities presuppose entities worthy of blame or praise, beings that could have abided by the conditions for the possibility of a peaceable community.’²⁶ An individual has to be rational, self-reflective and responsible entity in order to be called a person. Only such entities can participate and have their views taken into account when it comes to the

²³ Engelhardt, *The Foundations of Bioethics*, p. 104.

²⁴ Engelhardt, *The Foundations of Bioethics*, p. 106.

²⁵ Engelhardt, *The Foundations of Bioethics*, p. 105.

²⁶ Ibid.

moral organization of the peaceable community. If a being does not possess any level of intellect and rationality it is impossible for it to be concerned with, or convinced by, moral arguments. Hence, such an entity cannot be held responsible for any of its actions and cannot contribute towards the formation of a peaceable moral community.

Engelhardt understands the term 'person' as a moral term. 'One speaks of persons in order to identify entities one can with warrant blame and praise, which can themselves blame and praise, and which can as a result play a role in the core of the moral life'.²⁷ Like John Harris, he too argues that species membership is of no moral significance. We can easily think of beings that are not of human origin, but which nonetheless can act as moral agents. It is not the biological origin of an entity that makes it a person but its intellect and rationality. 'As talk of angels and of gods and goddesses, not to mention current science-fictional speculation regarding rational, self-conscious entities on other planets, indicates, not all persons need to be humans.'²⁸ Harris also lists the characteristics of rationality, self-awareness and minimum intelligence, when he describes his understanding of the term 'person'. So far, Engelhardt's secular bioethical system and Harris's one seem to coincide. However, Engelhardt chooses to add another aspect to personhood that Harris does not consider; the societal aspect of personhood. Harris perceives personhood as a status that is strictly and exclusively derived from one's cognitive abilities. If one has all the characteristics that make one's life valuable then he or she counts as a person. One does not need the recognition and affirmation of his or her personhood by others. Persons are morally valuable beings regardless of whether they are members of a community or they live in isolation. For Harris it is sensible to talk of the

²⁷ Engelhardt, *The Foundations of Bioethics*, p. 107.

²⁸ Ibid.

valuable existence of a person, even if this person is left alone in the universe. Engelhardt's account of personhood, on the other hand, is more socially orientated. Beings with intellect and self-awareness become persons, that is moral agents, when they are asked to form societies and interact with other people. A commonly accepted moral law can secure the peaceful coexistence of people in a society. One can exercise his or her role as a moral agent only within the boundaries of a community. Consideration of persons as moral agents becomes meaningful only when there is a need for coexistence and cooperation. Someone left alone on an island does not count as a moral agent since there is no moral community to which this entity belongs. Personhood is mainly a social characteristic; the reflection of our actions to other persons. 'The very notion of moral community presumes a community of entities that are self-conscious, rational, free to choose, and in possession of a sense of moral concern.'²⁹

iii. Human beings that are not persons and persons that are not human beings

It is evident that Engelhardt does not believe that only human beings can be persons. Every entity that can demonstrate characteristics of personhood, such as self-consciousness, rationality and the ability to understand the notion of worthiness of blame and praise, can be regarded as a person and therefore a moral agent, regardless of its origin. Foetuses, infants, profound mentally handicapped people and people in a comatose state are examples of human non-persons. 'Such entities are members of the

²⁹ Engelhardt, *The Foundations of Bioethics*, p. 105.

human species. They do not in and of themselves have standing in the moral community. [...] They are not prime participants in the moral endeavor.’³⁰

Personhood as a social characteristic requires from persons the ability to act in ways that are justifiably praiseworthy or blameworthy. Beings that cannot be full members of a moral community cannot be regarded as persons. Persons are equal members of a society with full responsibilities and rights. Their equality depends on the fact that they can decide to build or destroy, comply with or oppose the moral community they belong to using their intellect, their autonomy and their freedom of choice and action. One cannot praise a flower for blooming but one can praise the gardener for taking good care of his plants. Similarly one can not blame a dog for eating the Sunday roast, but one can blame the cook for leaving the kitchen-door open. Flowers and dogs are not able to make moral choices; they simply follow their nature from which they are not able to divert. On the other hand, persons like gardeners and cooks can make moral choices. Moral agents always have the choice to do one thing instead of another, and for that are always able to be held responsible for their actions or omissions. Foetuses, infants and the profound mentally retarded cannot *choose* to act one way or another. Like plants and animals, they simply follow their nature. ‘For these reasons it is nonsensical to speak of respecting the autonomy of fetuses, infants, or profoundly retarded adults, who have never been rational. There is no autonomy to affront.’³¹

Engelhardt admits that the only living persons we know of are *human* persons. However, the fact that we can think of non-human persons reinforces the idea that personhood has nothing to do with species membership. ‘The archangel Gabriel

³⁰ Engelhardt, *The Foundations of Bioethics*, p. 107.

³¹ Engelhardt, *The Foundations of Bioethics*, p. 108.

appearing to Mohammed in the desert, and E.T. going through a modern twentieth-century American town, provide examples of entities that are persons, though they are clearly not human.’³² These persons seem to share with us not our biological characteristics rather our personhood characteristics. They appear to be rational, self-aware, autonomous and responsible. The fact that we are not aware of the biological characteristics of angels and extraterrestrial beings does not stop us from thinking of them as moral agents. According to Engelhardt, as long as an individual can demonstrate personhood characteristics and can interact and communicate with persons on an equal level, there is no reason why one should not be regarded as person himself/herself. Species membership is not a morally important characteristic. Therefore, Engelhardt concludes that ‘[t]hough failing to treat a fetus or an infant as a person in the strict sense shows no disrespect to that fetus or infant, to fail to treat E.T. or a peaceable extraterrestrial at a Star Wars bar scene without such respect would be to act immorally in a fundamental fashion. It would mean that one had acted against the very possibility of the peaceable community.’³³

Life is an unbroken continuum that started billions of years ago, Engelhardt notes. What is important, he argues, is not the emergence of living beings, but the emergence of persons. Even though we can trace the line back to the beginning of the cosmos when we are talking about biological life, we cannot do the same thing with personal life. Each personal life has an individual beginning and end, and a short lifespan. Engelhardt concludes that ‘...not all persons need be human, and not all humans are persons. In order to understand the geography of obligations in health care regarding fetuses, infants,

³² Engelhardt, *The Foundations of Bioethics*, p. 107.

³³ Engelhardt, *The Foundations of Bioethics*, p. 108.

the profoundly mentally retarded, and the severely brain damaged, one will need to determine the moral status of persons and of mere human biological life, and then develop criteria to distinguish between these classes of entities.’³⁴ In a peaceful moral society the only beings that can count as morally valuable are autonomous persons; beings that can decide for themselves and run their own lives. All other beings *ipso facto* have to have their lives administrated and organized by persons.

The way that human communities are structured, Engelhardt notes, shows signs of a clear bias in favour of persons. ‘Since it is only persons who reflect on the world and fashion account of its meaning, all account will perforce be developed in the rational language of persons, such that rational beings and their concerns will recurringly be central to moral accounts.’³⁵ This, however, is an inescapable situation, says Engelhardt, even if this means that in the future we might live in a peaceful society where Martians will be more important than human children. Moral communities are created, organized and regulated by persons. It will be against the basic canon of a moral community to discriminate against beings that are persons just because they do not belong to our species. ‘One should note that prejudice in favor of persons is not like prejudice in favor of humans versus other possible rational species. If, for instance, we ever needed to compare the competing claims of humans and extraterrestrial persons, we could never morally use them merely as means, as one may use animals.’³⁶

³⁴ Ibid.

³⁵ Engelhardt, *The Foundations of Bioethics*, p. 109.

³⁶ Engelhardt, *The Foundations of Bioethics*, p. 110.

iv. Human Persons

‘One is, or should be, concerned with determining when in human ontogeny humans become persons.’³⁷ Even though Engelhardt believes that species membership should have no moral importance, nonetheless he recognizes that, at least in this world, it is human beings that have the ability to count as persons. It is human beings normally that grow to become moral agents. Although the morally important feature is their personhood, their humanness also counts as an indication of their ability or potentiality to be or become moral agents. ‘But insofar as one characterizes the peculiar anatomical structures and physiological capacities of humans as primates, one advances a set of biological characteristics that take on moral significance only insofar as they support the special characteristics of persons, namely, their capacity to play a role in the moral community. It is because members of *Homo sapiens* are usually self-conscious, rational, and possess a moral sense that being a human is so significant.’³⁸

At a first glance this last sentence seems to contradict Engelhardt’s claim for the non-significance of species membership in regards to personhood. What he seems to be saying now is that being human *is* an important feature for the classification of an entity as person. If human beings are usually human persons then human embryos, foetuses, children at least, that have the potential to become persons should be held equally as valuable and worthy in a society as their parents. Does this mean that Engelhardt is convinced by the argument from potentiality and holds that all human beings should be awarded a special moral status in virtue of their potential to become persons?

³⁷ Engelhardt, *The Foundations of Bioethics*, p. 108.

³⁸ Engelhardt, *The Foundations of Bioethics*, p. 107.

Engelhardt believes that the argument from potentiality, when it comes to human embryos and fetuses, is highly unlikely to be convincing. It is a logical theorem, he states, that if *X* is a potential *Y* then clearly *X* is not a *Y* yet. Consequently, *X* cannot have the same rights, responsibilities, and therefore the same status as *Y*. What potentiality actually reveals is a possibility of the future, not an actuality of the present. It is nonsensical to believe that because Ben is studying to be a doctor in the future, he already *is* a doctor and for that has the same rights and responsibilities doctors have. John Harris holds exactly the same stance when it comes to potentiality and potential persons. Treating someone as *Y* before s/he becomes *Y* is as absurd as treating everybody as dead, since we are all potentially dead, even if not actually dead yet. Engelhardt tells us that even the theologians of the Middle Ages did not think that potential persons should be treated the same as actual persons. Aquinas argued that killing an early foetus did not involve the evil of murder³⁹ and this view was the official view of the Catholic Church up until 1869. Killing embryos was still considered to be a sin, but it was analogous to the sin of contraception, and not the sin of murder.⁴⁰

The language of potentiality is puzzling and misleading, Engelhardt maintains. Potentiality seems to imply that in some mysterious and magical way the potential *Y* already pre-exists in the actual *X*. Therefore, instead of talking about potentiality he prefers to use the word probability. This makes things a bit clearer and leaves out confusing ideas of pre-existence, he claims. 'It is therefore perhaps better to speak not of *X*'s being a potential *Y* but rather of its having a certain probability of developing into *Y*.

³⁹ Not all scholars agree with Engelhardt on that. For example, see Haldane, J. and Lee, P., 'Aquinas on Human Ensoulment, Abortion and the Value of Life', *Philosophy* 78, 2003, pp. 255-276.

⁴⁰ Engelhardt, *The Foundations of Bioethics*, p. 111.

One can then assign a probability value to that outcome.’⁴¹ Probability is a clear, measurable notion. It is a fact of nature that fifty to sixty percent of human zygotes never manage to implant. They are naturally aborted without the woman carrying them even noticing. Based on these scientific facts, the probability of an early human embryo becoming a person, i.e. a healthy adult human being, is approximately in the range of 0.4.⁴² Hence, we can positively say that a human embryo has a 0.4 probability of becoming a person. Yet, this probability does not suggest that they already are persons, i.e. rational autonomous and self-determined moral agents.

One has no direct moral obligations to protect the life of a non-person. Therefore, preventing the conception of such entities or aborting them is not equivalent to harming a person.⁴³ ‘Though one is bound morally to respect persons in the sense of forbearing from unconsented-to harms against them and acting to aid them in achieving their good, it does not follow that one is bound to increase the number of such entities to which one has obligations.’⁴⁴ Consequently, a person has the right to decide to forbid a human entity from becoming a human person by terminating a pregnancy on the grounds that the entity does not fulfil the criteria of the sort of person s/he would like to commit to. If a prenatal test reveals that the foetus suffers from some kind of disease or defect then ‘...one might conclude that persons of a particular sort, such as those with severe physical or mental impairments, would create particularly severe moral obligations, which would be best avoided. In such circumstances, one might decide to prevent such obligations from

⁴¹ Engelhardt, *The Foundations of Bioethics*, p. 111.

⁴² It could be even less, if one takes into account all the risks related to pregnancy, labour and all the fatal accidents and diseases that could occur and could cost the embryos/foetus/neonates life before one reaches the state of personhood.

⁴³ Unless we consider the case of a society that faces extinction because of very low birth rates. Then an abortion or extensive contraception for long periods of time might be viewed as harm against the society as a whole, even if it is not considered as harm against specific potential persons.

⁴⁴ Engelhardt, *The Foundations of Bioethics*, p. 111.

coming into existence by using abortion.’⁴⁵ Overpopulation, lack of resources, and climate change could also constitute good reasons why a society could rationally decide to use abortion as a method of preventing more human persons to come into existence, argues Engelhardt.

v. The moral status of the human embryo

It is quite clear from the above statements that in Engelhardt’s peaceful moral society human embryos have no direct or intrinsic moral status. The human embryo is missing all the abilities and faculties that could make one a moral agent. Its life and existence, as in the case of any other living animal, must be determined and regulated by persons. It is the case that only rational beings can give a rational account of the nature of things, and they are the only living beings that can define and protect their interests. For this reason ‘[a]dult competent humans have much higher intrinsic moral standing than human fetuses or adult frogs.’⁴⁶

According to Engelhardt’s secular theory, human foetuses, which are able to feel pain, share the same moral status with animals. Persons still have to respect sentient beings. However, respect to sentient beings is different to the respect shown to persons, in kind and in degree. ‘Respect of persons springs from the concern to act in ways in which persons can be justified as praiseworthy or blameworthy. In contrast, caring for animals springs from the concern to have a world that maximizes welfare and sustains a

⁴⁵ Engelhardt, *The Foundations of Bioethics*, p. 112.

⁴⁶ Engelhardt, *The Foundations of Bioethics*, p. 104.

web of sympathies.’⁴⁷ We are obliged to show both respect and beneficent regard to persons, but we need to show only beneficent regard to animals. Non-rational beings fall outside of the bounds of the morality of mutual respect. The only moral duties we have towards animals are duties of beneficence and non-maleficence.⁴⁸

Persons are the founders and legislators of moral communities. Since there is no universal law about the way persons and other beings should be treated, every moral community is left to decide these matters for itself. How much respect moral agents are going to accord to non-moral agents, depends entirely on their moral concerns and sympathies. It is common for persons to be considerate towards animals, but also towards human zygotes or fetuses. ‘This web of sympathies justifies a wide range of beneficent action, not only to laboratory animals, but to human fetuses as well. Such concerns may influence the kind of abortifacient one might choose, all else being equal. They will as well have implications for the ways in which animals are treated generally. They strongly support policies of kindness and sympathy toward animals. However, they do not foreclose the raising of animals for meat or hunting, much less for use in research, whether it be medical research in the strict sense or even the testing of the safety of new cosmetics.’⁴⁹

For Engelhardt, feeling sympathetic towards a non-person does not translate into an obligation to protect its life under any circumstances. Nonetheless, it does require from persons not to inflict unnecessary pain onto them. This in turn raises the question of what happens when the subject of concern is incapable of feeling pain, as in the case of an early human embryo. It is not clear why persons should be concerned with not

⁴⁷ Engelhardt, *The Foundations of Bioethics*, p. 115.

⁴⁸ Engelhardt, *The Foundations of Bioethics*, pp. 114 -115.

⁴⁹ Engelhardt, *The Foundations of Bioethics*, p. 115.

inflicting pain on subjects that cannot feel pain, or about harming beings that are not moral agents. Is there another way to justify our feelings of sympathy towards human embryos?

Next to the notion of the moral person, Engelhardt introduces a different one; the notion of the social person. We have the tendency to award human non-persons with rights that normally belong to persons when accepting them in our societal group. Even though these rights do not go as far as to prevent the painless killing of human non-persons, they still protect them from unnecessary pain and suffering. For example, in the case of human embryos, even though we believe that we should not offer them any special moral status, we still feel obliged to refrain from actions that might cause harm to particular future actual persons. 'To find grounds for protecting such entities, one will need to look at the justification for certain social practices in terms "being a person for social considerations."'”⁵⁰

The notion of the social person is not a new one. People have always had ways of initiating new members into their society. All societies throughout the history have held special ceremonies (name giving, baptism, etc) in order to introduce and accept newly born babies into their group. Normally these ceremonies would be held some time after the birth of the child. The parents and the society wanted to make sure first that the newborn was strong enough to survive before they accepted it in the society and started forming bonds with it. Even today many parents are advised to keep a distance from their newborn if it suffers from an incurable condition that will lead to a quick and premature death, e.g. encephalitis. This way the psychological impact of the death of the child would be less strong and the mourning less severe.

⁵⁰ Engelhardt, *The Foundations of Bioethics*, p. 116.

Being a person in a social sense translates into being accepted by a social group, even before acquiring all the characteristics that will make an entity an equal member of the society. As Engelhardt notes '[A] social role of person can be justified for infants and others in terms of (1) the role's supporting important virtues such as sympathy and care for human life, especially when that life is fragile and defenseless, and (2) the role's offering a protection against the uncertainties as to when exactly humans become persons strictly, as well as protecting persons during vicissitudes of competence and incompetence, while (3) in addition securing the important practice of child-rearing through which humans develop as persons in the strict sense.'⁵¹ Additionally, in terms of utilitarian and teleological considerations a special social status to embryos can be justified through the argument from potentiality. Human embryos that have been accepted by their family and have been given a social role are treated differently because of their potentiality of personhood.

To summarize Engelhardt's secular position, human embryos are not persons and because of that do not deserve any moral status in the strict sense. They are rated morally lower than other adult animals, since they are not conscious or able to experience pain. They can be awarded a special social status, though, only if they are lucky enough to be conceived by persons who care for them and have made the conscious decision to protect and parent them. In this case, human embryos are introduced into a social circle and are given a special social standing. They have become important for the society that they are about to enter and consequently the society has decided in favour of their life. 'Fetuses are not persons. They are the biological products of persons. They become persons in the strict sense only some time after birth. They may become persons in the social sense if a

⁵¹ Engelhardt, *The Foundations of Bioethics*, p. 117.

community ascribes to them some of the fundamental right to protection usually accorded to persons in the strict sense. Early-gestation fetuses appear to have minimal, if any, mental life. They do not appear to have sufficient mental capacity to suffer as can normal adult mammals. It is for these reasons that this volume has already concluded that their moral status must be understood primarily in terms of their being the special possessions of persons and in terms of our concerns for the persons they may become.⁵²

The ethical system for moral friends

The ethical system Engelhardt chooses to share with his moral friends is that of *traditional* Christian bioethics. He finds it to be totally different not only to the secular one, as described above, but also to the *post-Christian* Christian one, the Christian expression of the liberal cosmopolitan ethos. Engelhardt accuses the post-Christian Christian bioethics of being the kind of Christian bioethics that is empty of transcendence. '[...] Christian bioethics becomes post-Christian in not invoking as its ground the uniqueness of the Christian revelation of Christ as God.'⁵³ It is a type of Christianity that keeps the narratives and the images of Christianity only as long as they do not contradict the liberal ethos of the modern society, but refuses to recognize any transcendental truth in them. The narratives and the images become an expression of the aesthetics, aesthetics of spirituality, rather than of a transcendental reality. Christian

⁵² Engelhardt, *The Foundations of Bioethics*, p. 237.

⁵³ Engelhardt, *The Foundations of Christian Bioethics*, p. 144.

religion becomes part of a great mosaic of world religions that appeal to their followers not because of the veridicality of their teaching, but because of the beauty of it. 'The content of such bioethics can include images of the transcendent, but they are nested within the immanence of human experience and moral agency, thereby loosing any claim on the outsider for unconditional repentance of conversion.'⁵⁴

Post-Christianity can be very appealing to many because it rejects the idea of fanaticism and traditional fundamentalism. Religious bioethics of this type is non-judgmental, all-accepting and ecumenical. Religious bioethicists do not need to be religion-specific. As long as they understand how the various religions deal with life-and-death related matters, they would be able to offer inter-denominational and inter-religious guidance and support. Post-Christian Christianity offers the hope of a peaceful coexistence and a better understanding among people with different traditions. Ideal as it sounds, '...the libertarian and the traditional Christian can only regard this moral and political ideal with horror and foreboding.'⁵⁵ The difference between traditional Christianity and liberal Christianity is fundamental. These two systems represent two totally different ways of moral thinking. For traditional Christianity morality, like every other aspect of human life, should always aim at achieving a greater unity with God and generally fulfilling God's will. 'Christian bioethics is not a set of rules. It is integral to a liturgical life leading to union with a truly transcendent God.'⁵⁶ Liberal cosmopolitan morality, however, transforms religion from a theocentric to an anthropocentric system by using as its point of reference man instead of God.

⁵⁴ Engelhardt, *The Foundations of Christian Bioethics*, p. 145.

⁵⁵ Engelhardt, *The Foundations of Christian Bioethics*, p. 148.

⁵⁶ Engelhardt, *The Foundations of Christian Bioethics*, p. 236.

Holism for the friends

Engelhardt believes that in a libertarian cosmopolitan society traditional religion and in specific traditional Christian religion will be able to find its place and survive. Therefore, the bioethical system he paints for his moral friends is one that preserves the traditional Christian values and accepts the transcendental meaning of the Christian images and narratives. Let us now see what traditional Christianity tells us about human beings, human persons and human embryos.

i. Human beings and human persons

Traditional Christianity recognizes no distinction between the terms human being and human person. The term ‘human being’ refers to the biological species *Homo sapiens* but also refers to the creature God created with love according to God’s Image and Likeness, and breathed into his nostrils the breath of life.⁵⁷ Human beings for Christianity are inseparable psychosomatic unities. Engelhardt believes that one should not think of body and mind as ‘two substances but two distinguishable levels of human significance...’.⁵⁸ Matter and spirit, body and mind are two sides of the same coin.⁵⁹ One is expressed and

⁵⁷ Genesis 2:7.

⁵⁸ Engelhardt, H. T., ‘The concepts of health and disease’, H. Tristram. Engelhardt, Jr. and Stuart F. Spicker (eds.), *Philosophy and Medicine: Evaluation and Explanation in the Biomedical Sciences*, vol. 1, Dordrecht, Boston: D. Reidel Publishing Company, 1975, pp. 125-141 (135). Engelhardt HJ (1975) The concepts of health and disease. In HJ Engelhardt and S Spicker (eds.): *Evaluation and Explanation in the Biomedical Sciences*. Dordrecht: D. Reidel publishing company, pp. 125-141.

⁵⁹ Holistic anthropology will be fully investigated in Chapter 5 of this thesis.

manifested through the other. Personhood is not understood as a set of faculties as in secular ethics. Human beings are persons because they can relate to a personal God. Personhood is the expression of the relationship between creature and Creator. Soul may facilitate this relationship.

However, traditional Christianity was never interested in specifying the exact moment of the ensoulment of the body. This seems to be an unanswerable question that carries very little, if any, importance for Christian morality. St. Gregory Palamas writes: 'If we ask how the mind is attached to the body, where is the seat of imagination and opinion, where is memory fixed, what part of the body is most vulnerable and so to say directs the others ... in all such matters each man may speak his opinion...[I]t is the same with all questions of this sort about which the Spirit has given us no plain revelation; for the Spirit only teaches us to know the Truth which penetrates everything.'⁶⁰

The reason why the question of embodiment seems to be so trivial for traditional Christians is not because soul is not important, but because it is not up to humans to decide who can know God and who cannot. The actions of Christians should always be guided by a deep sense of love for God, fellow humans and nature. 'To be a person is to be a being, whose proper destiny is theosis,' argues Engelhardt.⁶¹ Whether someone will ever reach theosis or not is questionable. Nevertheless, the sheer potentiality of it is enough to make someone valuable to fellow humans and to God. The existence of a healthy, fully functioning brain may be the earthly manifestation of the soul, and consequently of personhood, but the judge of moral importance in traditional Christianity is not the temporal man but the eternal God.

⁶⁰ St Gregory Palamas, *Defence of the Holy Hesychasts* II.2.30, cited in Engelhardt, *The Foundations of Christian Bioethics*, p. 333.

⁶¹ Engelhardt, *The Foundations of Christian Bioethics*, p. 225.

ii. The moral status of the human embryo

The traditional Christian account of the moral status of human embryos can be derived mainly from the canons about killing and abortion. Killing of any human being is forbidden in traditional Christianity no matter what the circumstances. Whether in the case of just war, in the case of self-defence or protection of someone's own family, taking the life of a fellow human person marks the human heart deeply 'by intimately involving us in the broken character of our fallen world.'⁶²

The Christian Orthodox Church, even from its early days, considered abortion to be one of the severest of sins, equal to murder. The intentional killing of human embryos is opposed to the expression of Christian love. It is an immoral action that spiritually alienates the person from God. Whether the embryo is yet a person or not, whether there is a soul in the body or not is of no importance. Abortion, even when the life of the mother is at great risk, is still considered a homicide. The canons do not distinguish between early and late abortion. The main rule is that of refraining from harming any human life. He states that in the Christian Orthodox tradition '[T]he focus is on not harming human life within the womb. ... Christians are called to engage in reproduction with love, with humility, and without taking unborn life.'⁶³

Engelhardt is well aware of the fact that almost 50%, or more of human zygotes in the course of normal human reproduction never manage to implant and they are naturally rejected by the woman's body. Should all women feel morally guilty for this unintentional loss of human life? Should scientists, at least Christian scientists, dedicate

⁶² Engelhardt, *The Foundations of Christian Bioethics*, p. 325.

⁶³ Engelhardt, *The Foundations of Christian Bioethics*, p. 275.

their entire lives to trying to find a way to save all these embryos? Engelhardt maintains that what Christians need to do is recognize our 'broken' nature and at least 'delay communion subsequent to confession until after the next menstruation and after the completion of a time of prayer'.⁶⁴ Whether intentional or unintentional, whether an embryo implanted into the woman's womb or a zygote floating in the fallopian tubes or a petri dish (e.g. embryos used for IVF treatment or research) harm and loss of human life is a grave sin and for that the persons involved are always in need of spiritual therapy through repentance.⁶⁵

The Church of the first millennium did not distinguish between early and late abortions⁶⁶, nor did it employ to the argument for double effect – that one is not morally responsible for a death that occurs as a consequence of an action that aims at doing good and not harm – which allowed the Western Church to morally justify certain cases of abortion.⁶⁷ This approach to the issue of abortion and the status of human embryos might sound a bit strange to representatives of Western Christianity that are used to a more legalistic account of the morality of these issues. Traditional Christianity focuses more on the spiritual health and restoration of persons than on a juridical judgment of their actions. Everything that does not follow the spirit of the Church, every thought or act that obstructs the way to salvation calls for spiritual therapy. 'The non-juridical character of traditional Christianity grounded instead a therapeutic focus that sustains a concern about involuntary sins and sins committed in ignorance. One can become involved in an evil

⁶⁴ Engelhardt, *The Foundations of Christian Bioethics*, p. 282.

⁶⁵ Engelhardt, *The Foundations of Christian Bioethics*, pp. 275ff.

⁶⁶ In the 13th Century the Roman Catholic Church recognized the difference between abortion as a crime of killing a person and abortion as killing an unformed and unensouled foetus. See: Noonan, John T. Jr., 'An Almost Absolute Value in History,' in John T. Noonan, Jr. (ed.), *The Morality of Abortion*, Cambridge, MA.: Harvard University Press, 1971, pp. 1-59.

⁶⁷ This doctrine was introduced in the 19th century in the Western church. For the doctrine of double effect see: Heribert, J., *Moral Theology*, trans. Urban Adelman, Westminster, MD: Newman Press, 1952.

such as the death of a person, which, even if it happens unintentionally, can have an effect on one's heart. In particular, homicide, even when involuntary, provides *prima facie* grounds to undertake a special asceticism. Such "penance" should not be regarded as a punishment, but as a treatment.⁶⁸

According to the traditional Christian ethics that Engelhardt endorses for his moral friends, all human beings right from the moment of their conception till the end of their lives, share the same moral status. They are all worthy of love and protection and every attempt against their life or wellbeing is immoral. Traditional Christian bioethics does not depend on the moral canons invented by human persons. Humans are not in a position to judge the moral value of their fellow humans. Such a task falls outside their abilities and responsibilities. What they are expected to do is love God and fellow humans, respect and protect God's creation. Man should always be in quest for God. A relationship with God can only be established if man keeps the channels of communication clear of sin.

Concluding Remarks

'The concept of person which is addressed in *The Foundation of Bioethics* (1986) and elsewhere (*Bioethics and Secular Humanism: the search for a common morality* 1991) has its origin and significance in the possibility of resolving moral controversies amongst

⁶⁸ Engelhardt, *The Foundations of Christian Bioethics*, p. 278.

moral strangers with a moral authority that can be acknowledged by such moral strangers. [...]Moral friends can know there is much more to being a person. Moral strangers, unfortunately for them, may not be able to understand.’⁶⁹

In a liberal society, traditional Christian bioethics, as described above, will not be able to survive. Christians will have to surrender their doctrinal and transcendental beliefs and transform them into ‘...special art form, which can be affirmed as long as it accords with the moral rationality of the liberal cosmopolitan ethos.’⁷⁰ A secular liberal society endorses the values of equality and liberty. Citizens of a community should commit themselves to promoting and securing the peace and welfare of their social community. They should consent to attending the moral values that the whole of society agrees on, which should stem from the political and social character of the human nature (man as a social and political animal). Any other aspect of human activity that can give rise to moral beliefs should be kept in the private domain and not affect the citizens’ everyday encounters. ‘Citizenship has moral and social-ontological priority over religious commitments’, notes Engelhardt.⁷¹ ‘One is first and foremost a citizen, and only secondarily a person of faith.’⁷² Any kind of fundamentalism is rejected by the secular liberal society. A citizen that chooses to put his/her religious duties before his/her social duties is by definition a fundamentalist and his/her behaviour should be criticized and eventually reformed. State comes before God, and ‘if the ways of God are not the ways of the state, then the ways of the state must prevail.’⁷³

⁶⁹ Engelhardt, H. T., ‘Personhood, moral stranger and the evil of abortion: the painful experience of post-modernity’, *The Journal of Medicine and Philosophy*, vol. 18 (4), 1993, pp. 419-421 (420).

⁷⁰ Engelhardt, *The Foundations of Christian Bioethics*, p. 144.

⁷¹ Engelhardt, *The Foundations of Christian Bioethics*, p. 371.

⁷² Ibid.

⁷³ Engelhardt, *The Foundations of Christian Bioethics*, p. 372.

Yet, it is exactly this ‘moral rationality’ that Engelhardt believes is impossible to find. ‘The foundational difficulty in establishing by discursive rational argument any content-rich account of justice, fairness, or public reason is that it presupposes agreement regarding background moral premise, rules of evidence and rules of inference. This is precisely where agreement does not exist. [...] humans do not share, indeed have never shared, and cannot through sound rational argument establish, a grand universal narrative or a content-full account of moral probity.’⁷⁴ Therefore, argues Engelhardt, instead of ‘chasing chimeras’ it is better to accept our moral differences and organize ourselves in societies of moral friends and moral strangers. Moral friends will have their moral premises already established and communication will be straightforward and easy. Moral strangers will keep their moral interaction to minimum and therefore they will avoid the need of ever trying to come up with a moral ground in common with those who do not share with them the same ethical presuppositions.

Engelhardt gives an example of how Christian health care could be organized in a libertarian society. Christian healthcare would be based only on the generosity of fellow Christians. The state would not be allowed to interfere, support, or regulate the Christian health care system. Engelhardt suggests that ‘[T]wo possibilities can be advanced as heuristic examples: 1) a global Roman Catholic healthcare system (perhaps under the brandname Vaticare, and 2) a global Orthodox Christian health care system (perhaps under the brandname Orthocare).’⁷⁵ These systems will be providing care within the context that is marked by Christian religious commitments, i.e. health care that aims not

⁷⁴ Engelhardt, ‘Bioethics in the Third Millennium: Some Critical Anticipations’, p. 236-7.

⁷⁵ Engelhardt, *The Foundations of Christian Bioethics*, p. 382.

only to the healing of the body but of the soul as well. Practices like abortions, artificial reproduction, euthanasia, etc. will be forbidden. Furthermore, they would offer the chance to their patients to be charitable by allowing an internal taxing system to operate that will be redistributing resources from rich patients to poor patients within the hospital, or from rich countries to poor countries in a global level. The hospitals will be protected through a special criminal and civil law. All the Roman Catholic hospitals around the world will be run by the Vatican and all the Orthodox Christian hospitals by the Orthodox Synod.

Engelhardt does not specifically discuss the case of biomedical research; however, one can safely infer that a similar practice would be followed for stem cell research. The Vatican and the Orthodox Church would have their own research centres where stem cell research will be conducted according to the Christian Catholic and Orthodox ethical guidelines. Since both Churches recognize a full moral value for the human embryo, stem cell research on human embryos will be prohibited. Furthermore, scientists will not be able to use surplus IVF embryos. Such a practice would be considered as cooperation in evil, which is contrary to Christian ethics.⁷⁶ Nor will they be able to use cybrids. The Catholic Church declared that cybrids should be regarded as human embryos and therefore their life should be protected.⁷⁷ The Orthodox Church has not yet expressed an official opinion on the nature of cybrids. Yet, the Orthodox and the Catholic Church share the same view regarding the sanctity of human life. Therefore, one

⁷⁶ Prammer, D. M., *Handbook of Moral Theology*, Cork: Mercier, 1956; Smith, R. E., 'The Principle of Cooperation in Catholic Thought', in P. J. Cataldo and A. S. Moraczewski (eds.), *The Fetal Tissue Issue: Medical and Ethical Aspects*, Braintree, MA.: Pope John Centre, 1994, pp. 81-92; Fisher, A., 'Cooperation in Evil', *Catholic Medical Quarterly*, vol. 44, 1994, pp. 15-22.

⁷⁷ Gledhill, R., 'Human-animal hybrid embryos should be legal says Catholic Church', *Times Online*, 27/06/07, viewed on 27/06/07 <http://www.timesonline.co.uk/tol/comment/faith/article1993579.ece>

can safely assume that Christian Orthodox research centres would also refrain from using cybrids for experiments. The only options left for the Christian scientist would be adult stem cells and perhaps iPS (induced pluripotent stem) cells. Also, Christian Orthodox and Catholic patients would only receive therapy that has been developed through research acceptable by the Catholic and the Orthodox Church. Notwithstanding the limited resources available for both researchers and patients, Christians at least would be content for having the opportunity to freely apply their moral code to every aspect of their life.

However, there are some problems attached to such a societal organization. Firstly, people that have not yet decided which moral community they belong to might have a difficulty in making a moral decision. People that lack a specific moral narrative could end up confused and bewildered when faced with a moral dilemma. Libertarian society does not provide its members with moral guidance. Therefore, unless they belong to a specific community in which they could receive a specific moral education, they will not have a basis upon which to found their moral judgments. They could become vulnerable to the rhetoric of competent and persuasive leaders. Of course, as long as it is their rational choice to follow a specific religious, spiritual, political etc. group, no one has the right to forbid them from doing so. Nonetheless, decision making requires not only rationality but also knowledge. As Engelhardt admits ‘...it is not possible to choose among many of the competing visions or accounts of justice, fairness, and appropriate behavior on the basis of sound rational argument. To choose authoritatively among competing content-full moralities or moral accounts, one must already have background moral guidance.’⁷⁸

⁷⁸ Engelhardt, ‘Theories and Methods in Bioethics’, p. 338.

The second problem is linked with religious traditions proclaiming that they hold the absolute truth. Engelhardt believes that once ‘...religion is no longer anchored in a veridical experience of the transcendent truth of God, it becomes a special art form.’⁷⁹ Therefore, keeping this belief seems vital for the authoritative presence of a religious community. It is the case that most religions in their traditional form hold this belief. It should be expected that their followers feel morally obliged to spread the good news around and show the “path” to all moral strangers. In traditional Christian and Muslim religion, for example, evangelism is part of the traditional ethos. Yet libertarian society would not tolerate preaching and conversion. How can we overcome this problem?

There are two possible solutions: either members of a libertarian society should accept that truth can have many aspects and many faces, or they should just tolerate the “false” claims of their moral strangers. The first solution clashes with the ethos of traditional religions. It is impossible for traditional Christianity to accept that the triadic God may not be the one and only true God. This would shatter the fundamental principals of the Christian religion.

The second solution is tolerance of “false” claims. Christians would have to accept that people outside their moral community would live a life based on wrong beliefs, such as the non-existence of God. It can be argued that this solution is also opposed to the traditional Christian ethos. Evangelism and preaching, but not forcible conversion, is part of the teaching of traditional Christianity. Engelhardt believes that conversion can take place through witness and example in a peaceful secular society.⁸⁰ Yet, if people exercise their moral tradition only when in the company of moral friends,

⁷⁹ Engelhardt, *The Foundations of Christian Bioethics*, p. 144.

⁸⁰ Engelhardt, *The Foundations of Bioethics*, p. 13.

and they adopt a different morality when they encounter moral strangers, how is it possible for a moral exchange to occur?

I believe that a liberal society would give Christians more opportunities to spread the 'Good Word', than a libertarian one. Libertarianism would have Christians confined into their own moral state with very little opportunity to meet moral strangers. Unless some take the decision to step outside of the protective walls of their moral community and act as missionaries, the chances of converting people are minute. On the other hand, in a liberal society, where the minimum liberties of freedom of speech and freedom of self-disposal are operative, a Christian will have the chance to 'advertise' his religion by living by it and setting him/herself as an example for others to follow. It is easier to convey a message through actions than through words. Monasticism and withdrawal from the secular world is part of the Christian tradition, but Christianity never urged its followers to abandon the secular society and retreat into a protective Christian institution. The Church is the shelter for the Christian and the Church has to stay within the world to operate as a light-house for people in search of the truth.

Furthermore, as Engelhardt recognizes, the libertarian ethos can allow for many sinful actions to take place without the state to be able to intervene. This is the price that a libertarian society needs to pay. 'Rights to privacy in this strong sense indicate not just that sinners are at liberty to perform their immoralities, with consenting others in the sense that coercive force will not be used against them, but also that consenting persons should be free to pursue the kingdom of God as they see fit. This idea of protected rights to privacy thus gives secure political space not only for immorality, but also for the

pursuit of holiness.’⁸¹ In 2001, Armin Meiwes killed and ate a 42 year old man from Berlin named Bernd Jürgen Brandes. Brandes had given his consent to the killing and eating of his body.⁸² It is a clear case of an action based on the principle of common agreement. Meiwes and Brandes did not harm anyone else; neither imposed any burden on the general community. In a libertarian society, Meiwes would not have been accused and convicted of manslaughter.

Cases like this one would be more common in a libertarian society. As Engelhardt himself states, in a libertarian cosmopolitan society ‘...people will have a secular moral right (i.e., others will not have secular moral authority to interfere) to do what many may by special insight know to be very wrong. In secular terms, those with special moral insights will be secularly morally obliged to tolerate (suffer) many choices that they recognize as grievously wrong.’⁸³ However, the Christian ethos, as described by Engelhardt requires from its followers to guide others away from sin. A good Christian ‘...will indeed seek opportunities for converting others and directing them away from sin.’⁸⁴ If preventing others from acting immorally is part of the Christian’s obligations, then it seems to me that a libertarian society would, most likely, cause more moral suffering to a Christian than a liberal one. At least a liberal society would have some kind of moral code with which citizens should comply. Even if the state’s moral code does not agree with the Christian code, Christians will have the chance to influence and maybe alter the code through teaching and engaging in dialogue with moral strangers, and

⁸¹ Engelhardt, *The Foundations of Christian Bioethics*, p. 374-5.

⁸² ‘German Cannibal Trial Opens in Complexity’, *Deutsche Welle*, 03/12/03, viewed on 15/01/06 <http://www.dw-world.de/dw/article/0,,1048363,00.html>.

⁸³ Engelhardt, *The Foundations of Christian Bioethics*, p. 41.

⁸⁴ Engelhardt, *The Foundations of Christian Bioethics*, p. 379.

through their vote. Accepting immorality as a trade off for being able to live in a suitable micro-cosmos does not seem to be compatible with the traditional Christian ethos.

Engelhardt strongly believes that secular bioethics and religious bioethics will never meet for the simple reason that there is no universally accepted canonical morality. He sees this diversity of moral beliefs as a major problem and a real threat to the peaceful run of the society. He is utterly convinced that the problem of incompatibility cannot be solved in the ethics field; therefore he transfers the problem to the socio-political field. Notably a libertarian cosmopolitan society promotes very important values for the peaceful running of a community, such as tolerance and acceptance. However, the system he proposes does not seem to be a panacea either. It encourages the creation of small islands of morality in the ocean of libertarian moral freedom without offering a clear method of communication between these islands. People would need to carry two personas, one private and one public, without allowing these two ever to meet and merge. Engelhardt recognizes that major changes to the way people think should be made before a libertarian cosmopolitan system could become tenable.

My aim is not to defend liberalism against libertarianism. However, it does not seem obvious to me that raising moral barriers between people and putting ethical tags on them will result in a peaceful community. Engelhardt is right when he says that people do not share the same moral beliefs, and yet, I do not think that uniformity is the right answer to the problem of bioethics today. There are hundreds of different Christian Churches around the world, even though Christians are (or should be) sharing the same doctrines and beliefs. Yet, the diversity within the Christian world does not let them be

united under 'one, holy, catholic and Apostolic Church'⁸⁵. Perhaps people will never share the same metaphysics, but maybe they can be convinced to accept the same anthropology.

Engelhardt, depending on to whom he addresses his writings, offers two different anthropological theories. The first is secular, functionalistic and utilitarian. He subscribes to a personalism similar to that advocated by Harris. Human persons are human beings with specific capacities that are easily demonstrable. Intrinsic moral value depends on personhood characteristics and not on humanity. Any being that has the capacity to demonstrate personhood traits is regarded as a person and speciesism is a vice. When he talks to his moral friends he presents a completely different account of humanity. His theory, this time, is completely based on the Christian doctrine of God as the Creator of human beings and on *Imago Dei*. He proposes a Christian holistic anthropology as found in the Judeo-Christian philosophy. He describes man as a psychosomatic unity with intrinsic moral value right from the moment of conception. The basis of this theory is the belief that man carries God's Image. Every human is a unique and irreplaceable entity right from the beginning of his/her existence. God recognizes him/her as such from conception and from a relationship with him/her.

Even though he believes that his traditional Christian theory is the true one, he cannot share it with others, unless they belong to the same religious group. 'Moral friends can know there is much more to being a person. Moral strangers, unfortunately for them, may not be able to understand.'⁸⁶ It seems pointless, though, to know of a truth that cannot be given to others. It is most unlikely that all the citizens of this world will one

⁸⁵ Nicene Creed of Faith.

⁸⁶ Engelhardt, H. T., 'Personhood, moral stranger and the evil of abortion: the painful experience of post-modernity', *The Journal of Medicine and Philosophy*, vol. 18 (4), 1993, pp. 419-421 (420).

day convert to Christianity and accept the Christian One God, Father Almighty as their creator. However, if a common understanding of what is a human being prevails, then this could work as a strong base for bioethics.

Segregating religious beliefs in closed moral communities as in a libertarian society or disrobing religions from their doctrinal beliefs as in a liberal society might not be the only two options available. I will argue in the chapter to follow that there might be a third way Christian ideas can enter the bioethics debate. It might not be possible to rationalize or prove the metaphysical ideas behind the Christian doctrinal beliefs but it is possible to rationally argue for the philosophical ideas that accompany them. Christian holistic anthropology supports the view that human life has intrinsic moral value. It sees human beings as complete psychosomatic unities right from the beginning of their existence until the end. If people could agree on the value and importance of the human nature then bioethics, a discipline that deals with issues of human life and death, would have a strong foundation to be build on. I will show how philosophy of mind and systems biology theory could come to our aid to establish holistic anthropology on a ground that is not exclusively Christian. I will demonstrate how holistic anthropology, although it derives from the Judeo-Christian tradition, can be substantiated philosophically and scientifically and hence, can become a valid theory to enter our secular multicultural society.

Chapter 5

HOLISM WITHIN AND OUTSIDE OF THE CHRISTIAN TRADITION

Introduction

As the primary concern in this thesis has been to examine the moral status of the embryo and whether it is morally justifiable to use embryos as research material, an appraisal of the thought of John Harris, Mary Warnock and Tristram Engelhardt has been undertaken.

In Chapter 3, contrasts of the thoughts of Harris and Warnock indicated a number of difficulties arising from their understanding of human nature. I demonstrated that John Harris' personalist theory constructs a very narrow and rigid notion of moral value that leaves a great proportion of humanity out. Furthermore, his

position leads to counter-intuitive conclusions such as moral justification for infanticide. Mary Warnock on the other hand focuses on individuality. On the grounds that pre-embryos do not count as individuals, she denies them moral status. However, I have shown that this argument is scientifically untenable. Both authors fail to recognise the distinction between the terms 'full moral value' and 'intrinsic value'.

Intrinsic value is a term that refers to the particular value something has in virtue of its particular nature. It is the type of value a thing has in itself, for its own sake and not for the sake of something else.¹ Full moral value, on the other hand, refers to a cluster of moral values that are derived from, and dependent on, other qualities and attributes. In the case of human persons, full moral value depends on their cognitive capacities, their ability to use language, to form meaningful relationships and contribute to the flourishing of society. The significance of recognizing the distinction between 'full moral value' and 'intrinsic value' will be demonstrated in the discussion below when an alternative theory, which forms the main argument of this thesis, is described.

In Chapter 4, I addressed the approach suggested by Engelhardt, who, unlike Harris and Warnock, is committed to a Christian stance. I explored the limitations of his position. He separates the world into moral friends and moral strangers. For his moral strangers, i.e. the secular society, he subscribes to a personalist account similar to that argued by Harris. For his moral friends he proposes a strong Christian moral theory that supports the intrinsic value of human life based on the doctrine of Divine Creation. As a devout Christian Orthodox he holds the faith that all human beings were created according to God's Image and God's Likeness. This unique condition of human nature is what makes human life absolutely morally valuable. However, he

¹ Zimmerman, M. J. 'Intrinsic vs. Extrinsic Value', in Edward N. Zalta (ed.), *The Stanford Encyclopaedia of Philosophy*, Fall 2008 Edition,
URL = <<http://plato.stanford.edu/archives/fall2008/entries/value-intrinsic-extrinsic/>>.

believes that outside of a Christian edifice such a position is not tenable; only a secular utilitarian ethical theory can be rationally accepted by the majority of contemporary society.

Whilst there are other positions which could be discussed, these three thinkers in particular have been chosen because they represent three serious attempts to rationalize the contemporary and complex question with which this thesis is concerned: the moral status of the human embryo and the justifiability - or otherwise - of human embryonic stem cell research. Also, as discussed in Chapter 2, present research being undertaken in the area of biotechnology using embryonic and adult stem cells, as well as stem cells from cybrids, is directed to just such an end. A fruitful outcome from such medical and scientific research would clearly advance our knowledge regarding human development, revolutionise the science of drug testing and potentially benefit the treatment of debilitating diseases such as Alzheimer's and Parkinson's Diseases, cancer and heart diseases.

Harris and Warnock envisage that their theories, argued for on rational grounds, would be generally accepted by all members of society. Engelhardt, being a devoted Christian, recognises that there are groups in every society that have separate strong moral beliefs, which dictate a different moral code. He is trying to make way for them within a secular society by proposing the creation of 'moral islands' where each community could live under its own ethical system. He, as a Christian, strongly believes in the full moral value of the human embryo. However he understands such a stance to be the product of faith and revelation and not of rational thinking.

However traditional Orthodox theology, to which he subscribes, would wish to raise very serious questions of Engelhardt's theological stance as having "sold out" on the very essence of the faith tradition to which he is so passionately committed.

Whereas he may reply that his commendation offers the theologian an escape from an irresolvable situation, and provides a workable option for those who wish to adhere to a theological viewpoint, the rational implications of his approach under critical appraisal result instead in the strength of the theological position, namely the 'intrinsic' worth of all creation, to be severely diminished.

There are two implications arising from Engelhardt's position. The first one is in a socio-political level: by segregating society in isolated moral groups he hinders dialogue and communication between people. However, I will not address this problem here. The second implication, and the one that is of particular interest in this thesis, is that by admitting that Christian ethics cannot be rationally argued for, he rejects the universality of the intrinsic value of human life, and by extension the human embryo, that is implicit in Christian theology.

The major question, and one central to this thesis, is whether an adequate alternative position is possible. If so, can it be said that holistic anthropology of the Christian theology can be defended within a secular context? Would theologians be able to agree with such a claim? Further, would other rational thinkers, whether believers or non-believers, happily hold with such a stance?

The primary emphasis in this chapter will be to delineate a response to such questions. This will also constitute the main thrust of a position which I consider to offer a more adequate explanation than the three options hitherto discussed. I shall begin by discussing holistic anthropology as an alternative philosophical/anthropological theory of human nature to more popular dualistic and monistic/materialistic understandings of human beings. Although this theory is not new but stems from the Judeo-Christian tradition and is well embedded in Christian theology, its applicability with respect to the moral status of the human embryo will

be described. I will attempt to show that such a theory is not comprehensive only within Christian tradition as Engelhardt argues - but can survive outside the protective walls of the Christian Church and enter the secular arena as an alternative anthropological/ethical theory.

The alternative position I will map out will focus on two issues. These issues are: (i) the question of the moral status of the human embryo and; (ii) whether it is morally justifiable to use embryos as research material in biomedical research. The necessity to find an anthropological theory that describes the human condition adequately and which takes into account all of the different aspects of human life and human experience is of primary importance and this is what I aspire to propose in this chapter. The kind of anthropology though relevant to the embryonic human beings in this chapter is philosophical anthropology, and not social or cultural. Philosophical anthropology is the discipline that tries to analyse humans as independent personal/physical entities in an attempt to describe the fundamental nature of the human being. By 'human nature' I mean the basic dispositions - physical, mental and spiritual - that characterise our particular species and differentiate us from other beings. I will propose that *holistic anthropology*, a theory that considers human beings as unities of body and mind, can provide the anthropological/philosophical edifice we need in order to answer the question regarding the moral status of the human embryo.

Human Beings as Psychosomatic Unities

According to holistic anthropology human beings are psychosomatic unities, an interconnection and interrelation of body and mind. These aspects of human life are distinguishable but inseparable. Human beings begin their lives as unities and finish their lives as unities. The mental and the spiritual are not just properties of the physical, but are as necessary for the existence of a being as the physical aspect is. This means that they do not supervene or depend ontologically on the physical. Their presence is fundamental and essential for the existence of the human being. According to holism man is not an amalgam of separate and independent parts; rather man is made of one substance, which is capable of everything that man is capable of. The mind is not separate entity that lives alongside the body and can exist independently.

John Polkinghorne describes human beings as 'psychosomatic unities, a package deal with mind and matter in inseparably complementary relationship to each other.'² As David Braine states 'We cannot extricate the mental or experiential element from the physical, seen as something independent of facts about the perceived world and the 'outer man'.'³ Activities such as perception, sensation, emotion and intentional action point at the psychophysical unity of the human person. In order for these to be adequately analysed and understood, it is necessary to view the human being as a mental-physical whole. This means that the body and mind

² Polkinghorne, J., 'Persons, Souls and Genetic Engineering', *Journal of Medical Ethics*, vol. 30, 2004, pp. 593-597 (597).

³ Braine, D., *The Human Person: Animal and Spirit*, London: Duckworth, 1993, p. 30.

work together, as different facets of one being, and not as different elements that happen to share the same space.

Holism in the Christian Tradition

As stated above, holistic anthropology is not a new concept. It stems from the Judeo-Christian tradition and is well embedded in the Christian theology. The Bible describes the human person as a whole and not as a combination of different individual parts. 'The Hebrew idea of personality is an animated body, not an incarnated soul.'⁴ However, dualistic concepts penetrated the Judeo-Christian thought and managed to establish themselves, especially among the most fundamental/popular forms of Christian religion.

Dualism was never completely abandoned as a philosophical approach. Contemporary theologians like Richard Swinburne still argue from a dualistic stance for the existence of the soul and the possibility of life after death.⁵ It is generally held that dualistic anthropological ideas entered the Christian thinking through the ancient

⁴ Robinson, H. W., *Religious Ideas of the Old Testament*, London: Epworth Press, 1947, p.83.

⁵ For discussion on how we can reconcile holism and the 'life after death' belief see: Adrian Thatcher, 'Christian Theism and the Concept of a Person', in Arthur Peacocke and Grant Gillet (eds.), *Persons and Personality*, Blackwells, Oxford, 1987. pp. 180-196. Also, H. Wheeler Robinson believed that the doctrine of resurrection does not necessarily need a dualistic anthropology in order to be explained but it works even in a holistic environment. Robinson, W. H., *The Christian Experience of the Holy Spirit*, 1928, London and Glasgow: Collins Fontana 1962, p. 28: 'Over against the Greek idea of an immortal soul temporarily inhabiting an earthly body, the Hebrew psychology gives us not an incarnated soul, but an animated body, as its characteristic doctrine of resurrection clearly shows, and this doctrine has proved able to maintain itself in its Pauline transformation, as the basis of the hope for the future', in Ch. Schwöbel and C. E. Gunton (eds.), *Persons Divine and Human: King's College essays in theological anthropology*, Edinburgh: T & T Clark, 1999, p. 8.

Greek philosophy, particularly Plato. Plato thought the person was an immortal soul trapped in a mortal body. He believed that true substances are not physical, but immaterial and eternal *Forms*. In *Phaedo* he argued that intellect is also immaterial and this is why people have knowledge of *Ideas* and *Forms* even before they are born. Their souls dwell in the place of *Forms* before they come and animate their bodies. The core belief in Plato's anthropological theory was that the soul pre-exists the material and ephemeral body and it strives to go back to the realm of the *Forms*.⁶

It has been argued that it was through the first translation of the Old Testament into Greek (Septuagint) between 3rd and 1st century BCE that ancient Greek anthropological ideas found their way to Judaic tradition.⁷ The purpose of the Greek translation of the Old Testament was to preserve Judaic tradition among Jews that had been Hellenised and had lost their Hebrew language. But translation from one language into another is a type of interpretation, and the introduction of new concepts was, perhaps, inevitable. When there was no available Greek word into which precisely to translate from the Hebrew, the translators chose a word that, according to them, could better convey the message of the biblical writer. Words that had a very specific meaning in Hellenic thought were introduced into the Old Testament and inevitably influenced the interpretation and understanding of the Scripture. For example, words for particular parts and organs of the human body were used in the Bible as parallelisms to indicate the whole person. 'When the most frequent substantives (for man's organs) are as a general rule translated by 'heart', 'soul',

⁶ Murphy, N., *Bodies and Souls, or Spirited Bodies?*, Cambridge: Cambridge University Press, 2006, pp. 12-13.

⁷ Browning, W. R. F., *A Dictionary of the Bible*, Oxford: Oxford University Press, 1996, pp. 7-10; Breslauer, S. D., 'Philosophy to Judaism: Two Stances', in Jacob Neusner, Alan Jeffery Avery-Peck (eds.), *The Blackwell Companion to Judaism*, Oxford: Blackwells Publishing, 2000, pp. 162-180. Also see: Fachenheim, E. L., *Jewish Philosophers and Jewish Philosophy*, Bloomington: Indiana University Press, 1996; Wolfson, H. A., *Studies in the History of Philosophy and Religion I*, Isadore Twersky and George H. Williams (eds.), Cambridge: Mass. &c., 1973.

‘flesh’ and ‘spirit’, misunderstandings arose which have important consequences. These translations go back to the Septuagint, the ancient Greek translation, and lead in the false direction of a dichotomic or trichotomic anthropology, in which, body, soul and spirit are in opposition to one another.’⁸ Yet, this was a problem that affected mainly the Hellenistic Jews who had received Greek education and understood Greek words in a Greek sense; bilingual Jews could potentially avoid this pitfall and see the original meaning of the texts.⁹

During the 2nd century AD Gnosticism -a new religious philosophical dualism – made its appearance in the Roman and Alexandrian schools. The Gnostics proclaimed the divine origin and superiority of the soul. They believed that the body was the source of evil and for that reason should be suppressed and disempowered. According to their theory, the human spirit yearns to be liberated from matter and to attain spiritual existence by approaching and communicating with God. The Church fought against these heretic ideas.¹⁰ Gnosticism was not the only form of dualism during that era. As mentioned above, during that time Hellenic philosophical and metaphysical ideas were mixing with Eastern and, of course, Judaic ones. Early Christian theologians were well acquainted with this Hellenistic tradition and used it in their attempts to build the philosophical structure of the new religion. Origen (ca. 185-254) and Jerome (ca. 347-420) were two of the main theologians who followed the Platonic tradition. Later, Augustine developed a modified version of Platonism. He described the human being as an immortal soul that for its earthly life was inhabiting a mortal body, but it was not imprisoned into it. The next major thinker that

⁸ Wolff, W. H., *Anthropology of the Old Testament*, SCM Press, 1974, p. 7.

⁹ For the history of the Greek translation of the Old Testament and its social and philosophical implications also see Brown, R. E. (ed.), *The Jerome Biblical Commentary*, London, Dublin, Melbourne: Geoffrey Chapman, 1989, and Barton J. and Muddiman J. (eds.), *The Oxford Bible Commentary*, Oxford: Oxford University Press, 2001.

¹⁰ See St Irenaeus, *Against Heresies*, Oxford: Clarendon Press, 1880.

concerned himself with the question of human nature was Thomas Aquinas. He was much closer to Aristotelianism and the idea that the soul is the life-giving form of the body. Even though it has been argued that Aquinas was also a dualist, many contemporary scholars maintain that Thomistic theology is much closer to holism than to Hellenistic dualism.¹¹

In the period of the Protestant Reformation, dualistic concepts became popular again. Among the main questions that were asked, and discussed, during this time was the question of whether the soul enjoys a conscious awareness of God during the period between death and the resurrection of the body- the 'intermediate state'. It was thought that unless the soul was understood as being of a different substance to that of the body, and hence able to exist without it, the doctrine of the intermediate state and purgatory would not make any sense. John Calvin argued that the soul continues to exist in a conscious state after the death of the body, whilst awaiting the Last Judgement. The same teaching became the official teaching of the Catholic Church by the Fifth Lateran council in 1513. The contemporary Calvinist theologian J. W. Cooper refers to the body-mind dualism as 'the traditional doctrine' and he defends it on the basis of the doctrine of the intermediate state and the biblical references to *Sheol*, the land of the shadows. In the introduction of his book *Body and Soul and Life Everlasting*, he writes: 'Body, Soul and Life Everlasting was written to remind thoughtful Christians that some sort of "dualistic" anthropology is entailed by the biblical teaching of the intermediate state, a doctrine that is affirmed by the vast majority in historic Christianity.'¹²

¹¹ Davies, B., *The Thought of Thomas Aquinas*, Oxford: Clarendon Press, 1992; Pasnau, R: *Thomas Aquinas on human nature: a philosophical study of Summa Theologiae 1a*, 75-89, Cambridge: Cambridge University Press, 2002.

¹² Cooper, J. W., *Body Soul and Life Everlasting: Biblical anthropology and the monism-dualism debate*, Grand Rapids: Eerdmans, 1989, p. xv.

Other contemporary Christian philosophers have supported the dualistic account. Alvin Plantinga maintains that dualism is entailed in the traditional teaching of the Creeds and was accepted by St Paul¹³, Richard Swinburne claims that only dualism could support the belief in the existence of the soul¹⁴ and Keith Yandell finds that only substance dualism - the view that the universe contains two fundamental types of entity: mental and physical - could give a satisfactory answer to the question whether one can survive the death of one's body, i.e. life after death.¹⁵

However, holism has been vigorously supported by theologians and biblical scholars as the traditional teaching of Christianity. These scholars postulated that a closer examination of the Biblical writings shows that such dualistic ideas do not necessarily exist in the Bible but were imported to Christianity from Greek philosophy. Karl Barth is one of these theologians that strongly proclaim the holistic character of the Scripture:

'We necessarily contradict the abstractly dualistic conception which so far was summarily called Greek, but which unfortunately must also be described as the traditional Christian view. According to this view, soul and body are indeed connected, even essentially and necessarily united, but only as two 'parts' of human nature... In general, the character and result of this anthropology are marked by a separation of the soul over the body, a humiliation of the body under the soul, in which both really become not merely abstractions but in fact two 'co-existing' figments - a picture in which probably no real man ever recognised himself, and with which one cannot possibly do justice to the biblical view and concept of man. It was disastrous that this picture of man could assert and maintain itself for so long as the Christian picture. We must earnestly protest that this is not the Christian picture.'¹⁶

For the reason of translation and language already explained, most biblical scholars agree that the biblical view of man is holistic and not dualistic. The Bible describes

¹³ Plantinga, A., 'On heresy, Mind and Truth', *Faith and Philosophy*, vol. 16 (2), 1999, pp. 182-193.

¹⁴ Swinburne, R., *The Evolution of the Soul*, Oxford: Oxford University Press, 1989; 'Body and Soul' in R. Warner and T. Szudka (eds.), *The Mind-Body Problem: A Guide to the Current Debate*, Oxford and Cambridge: Blackwell, 1994, p. 311-316; Swinburne, R., 'Dualism Intact', *Faith and Philosophy*, vol. 13 (1), 1996, pp. 68-77.

¹⁵ Yandell, K., 'A Defense of Dualism', *Faith and Philosophy*, vol. 12 (4), 1995, pp. 548-566.

¹⁶ Barth, K., *Church Dogmatics*, vol. III, Part 2, Edinburgh: T and T Clark, 1975, p. 382.

the man as a unity of body and mind, flesh and soul. All these aspects together constitute the whole man and none of them can exist separately. God created man as a whole. God created man in God's own Image and according to God's Likeness. This statement reveals two basic factors regarding human nature. First, humans are creatures like all other creatures in this world. Second, man bears God's Image, unlike any other creature in this world. Being a creature means that man, like every other living being cannot escape death. Man is a finite being with temporal beginning and end. Any ideas for eternal life are excluded from Biblical anthropology. As De Silva puts it, 'The doctrine of creation is the biblical 'no' to eternalism. This expresses the fundamental truth, that a created being has an element of non-being in him. Creatureliness implies non-being, with the natural necessity of death and the possibility of ultimate negation. This is implied in the doctrine of *Creatio ex nihilo*.'¹⁷

Nikos Matsoukas dedicates a chapter on 'ex *nihilo* creation' in his book *Dogmatic and Symbolic Theology B*.¹⁸ According to Christian theology, God created the cosmos *ex nihilo*, out of nothing. This statement might cause a slight confusion to the non-Christian reader. Christianity seems to imply that the world originates from nothing, and yet it is logically impossible to assume that something can come out of nothing. However, what Christianity does is to reconfirm this logical conclusion. God created the universe, and God is definitely not a "nothing". It might be more precise to translate *ex nihilo* as 'out of non-being' (*εκ του μη όντος*). This way it will be able to better comprehend the doctrine of divine creation. God always existed and thus God pre-existed creation. This means that God is a "Being" whereas the cosmos is a "non-being", but came into being through divine action. God and the cosmos do not share the same substance (*ousia*).

¹⁷ De Silva, L. A., *The Problem of the Self in Buddhism and Christianity*, London: Macmillan, 1979, p. 77.

¹⁸ Matsoukas, N., *Dogmatic and Symbolic Theology B*, Thessaloniki: Pournaras Editions, 1999.

God is eternal, self-existent/uncreated, self-contained and self-sufficient. Creation is the exact opposite; it is temporal, created and dependent on God for its existence. This is what we mean by creatureliness being a state of non-being. This doctrine describes and underlines the origin and the nature of created beings, and sets the basis of the relationship between God and creation. It is not just a juristic or ethical form of relationship, but a more meaningful, causative relationship where finite existence derives directly from, and depends entirely upon, the infinite Existence.¹⁹ Karl Barth draws the same distinction between “Being” (God) and “non-being” (man). He too talks about the temporality of creation and the eternal nature of God; the dependence of the whole creation on God and on God’s creative force.

‘Creaturely reality means reality on the basis of *creatio ex nihilo*, creation out of nothing. Where nothing exists – and not a kind or primal matter – then through God there has come into existence that which is distinct from Him ... Everything outside God is held constantly by God over nothingness. Creaturely nature means existence in time and space, existence with a beginning and end, existence that becomes, in order to pass away again. Once it was and once it will no longer be ... The creature is threatened by the possibility of nothingness and of destruction, which is excluded by God – and only by God. If a creature exists, it is only maintained in its mode of existence if God so wills. If He did not so will, nothingness would inevitably break from all sides. The creature itself could not rescue and preserve itself.’²⁰

The second piece of basic information is the *Imago Dei* creation. Again here, the holistic understanding of human nature is apparent. The Image of God is to be found in the whole person and not only in the soul. It is common, especially for theologians from the Catholic tradition to discuss *Imago Dei* as a cluster of attributes that belong only to the soul and not to the whole person. Biblical scholars like Gerhard Von Rad, though, disagree with this tendency of attributing to the Old Testament anthropological and metaphysical ideas alien to its philosophy. He believes that the

¹⁹ Matsoukas, *Dogmatic and Symbolic Theology B*, p. 144ff.

²⁰ Barth, K., *Dogmatics in Outline*, transl. G. T. Thomson, London: S. C. M. Press, 1949, p. 55.

story in the Old Testament refers to the whole man and not just to man's spiritual essence.²¹ This is a view common to the Orthodox tradition as well. We must always bear in mind, says Matsoukas, that all theologians accept the existential unity of man.²² He uses Gregory Palama, Irenaeus and Gregory of Nyssa as examples of theologians who commented on the soul-like character of *Imago*, by first, establishing a holistic view of the person.

Gregory of Nyssa's work *On the Making of Man* is of particular relevance and importance, as one of the most systematic works of early Christian philosophical anthropology.²³ Gregory, contrary to Origen and the Neo-Platonists of his time argues for the holistic understanding of the person as a body-mind unity.

'The true and perfect soul is naturally one, the intellectual and immaterial, which mingles with our material nature by the agency of the sense; but all that is of material nature, being subject to mutation and alteration, will, if it should partake of the animating power, move by way of growth; if, on the contrary, it should fall away from the vital energy, it will reduce its motion to destruction. Thus, neither is there perception without material substance, nor the act of perception take place without the intellectual faculty.'²⁴

Gregory understands the mind as the means by which God communicates with man. The mind is part of the whole person and the participation of the mind in the Image of God means that the whole nature, corporeal and incorporeal, can be elevated and redeemed and has the potential to move towards divine Likeness, namely *theosis*.

'And as we said that the mind was adorned by the likeness of the archetypal beauty, and being formed as though it were a mirror to receive the figure of that which it expresses, we consider that the nature which is governed by it is attached to the mind in the same relation, and that it too is adorned by the beauty that the mind gives,

²¹ Berkouwer, G. C., *Man: the Image of God*, Grand Rapids, MI: Eerdmans, 1962, p. 75.

²² Matsoukas, *Dogmatic and Symbolic Theology B*, p. 189.

²³ Gregory of Nyssa, 'On the Making of Man', in *Gregory of Nyssa: The Nicene and Post-Nicene Fathers*, vol. 5, translation by W. Moore and H. A. Wilson, Grand Rapids, MI: Eerdmans, 1988.

²⁴ On the Making of Man, p. 403.

being, so to say, a mirror of the mirror; and that by it is swayed and sustained the material element of that existence in which the nature is contemplated.’²⁵

He insists on the holistic nature of man: ‘the seminal cause of our constitution is neither a soul without body, nor a body without soul’²⁶; and he underlines the fact that ‘our faculty for life is not supported in any one way by some single organ, but nature, while distributing the means for our existence among several parts, makes the contribution of each individual necessary for the whole.’²⁷

Also, St John of Damascus – one of the great theologians and hymnographers of the Orthodox Church – in his composition *Funeral Idiomela*, when talking about the dead person, refers to man’s beauty that was fashioned after the Image of God and now lies disfigured in the tomb. It is the whole man that suffers death and is the whole man that waits the day of the resurrection.²⁸ Colin Gunton also affirms the holistic idea of persons as an image of God. He agrees with Karl Barth in understanding *Imago Dei* in relational terms. He chooses to stress, though, that ‘Relations are of the whole person, not of minds or bodies alone.’²⁹

Septuagint translates the Hebrew word *nephesh* with the Greek word *psychē*, meaning soul. However, the word *nephesh* in Hebrew can represent specific body parts or functions like throat, neck or desire, as well as soul.³⁰ In Judaic literature these terms are frequently used as pronouns, denoting the whole man and not just a specific part. For example, in Psalms 84:2 we read: ‘My soul longeth, yea, even fainteth for the courts of the Lord: my heart and my flesh crieth out of the living

²⁵ On the Making of Man, p. 399.

²⁶ On the Making of Man, p. 426.

²⁷ On the Making of Man, p. 422.

²⁸ Matsoukas, *Dogmatic and Symbolic Theology B*, p. 189.

²⁹ Gunton, C., ‘Trinity, Ontology and Anthropology: Towards a Renewal of the Doctrine of the Imago Dei’, in Schwoebel, C. and Gunton, C. E. (eds.), *Persons Divine and Human*, Edinburgh: T&T Clark, 1991, pp. 47-64 (59).

³⁰ Wolff, *Anthropology of the Old Testament*, pp. 10-25.

God.’³¹ Also, in Lev. 23:30 we read: ‘And whatsoever soul it be that doeth any work in that same day, the same soul will I destroy from among his people.’³² It is clear that the word *nephesh* here is translated as *soul* but the actual meaning is *person*. Even when *nephesh* translates as *soul*, the Judaic tradition does not understand *nephesh* as a substantial distinct and immortal entity in contradiction to the mortal body.³³ In the Old Testament *nephesh* ‘goes out’³⁴ when the person dies. There is no mention of any part of the person that goes on living. The inhabitants of Sheol (the Hebrew netherworld), as noted by H. Wheeler Robinson, are not souls but shades (*rephaim*).³⁵ Shades are neither bodies nor souls but a state of ‘perpetual weakened existence.’³⁶

There is no single word to denote the human person in the New Testament but a selection of different ones. These terms, found mainly in Paul’s letter, are *psychē*, *pneuma*, *nous*, *sōma* and *sarx*. Such words are used to signify the whole person; they also indicate how diverse and complex the human being is. The Apostle Paul, who for many is the ‘founder’ of Christian religion, affirmed in his letters the holistic understanding of the human person. He distinguished between flesh and body and he perceived that the mind could become “carnal”, and the body could become “spiritual.”³⁷ As Kallistos Ware puts it ‘While Paul’s view of the flesh is sombre, his estimate of the body is highly affirmative. ‘Present your bodies as a living sacrifice to God’, he writes (Rom 12:1) ‘Your body is a temple of the Holy Spirit ... Glorify God in your body’ (I Cor 6:19-20). That is exactly why sexual promiscuity is so deplorable - not because the body and its sexuality are unclean but because they are potentially

³¹ KJV.

³² KJV.

³³ Hastings, J. (ed.), *A Dictionary of the Bible*, Edinburgh: T. & T. Clark, 1902.

³⁴ Genesis, 35:18.

³⁵ Robinson, H. W., *The Christian Doctrine of Man*, 3rd ed., Edinburgh: T & T Clark, 1926, p. 18.

³⁶ *Eerdmans Dictionary of the Bible*, Grand Rapids, Mich.; Cambridge: W. B. Eerdmans, 2000, p.1119.

³⁷ I Corinthians 15:44.

holy: 'Your bodies are members of Christ' (I Cor 6:15). This vital Pauline distinction between *sarx* and *soma* has unfortunately been overlooked by all too many Christian preachers and moralists in later times, and so they have assumed that his strictures about the flesh apply to the body as such.³⁸

The distinction between *sarx* and *soma* does not introduce a new kind of dualism.³⁹ It is important to note that Paul is talking about the body in a manner that signifies that the body is as much a part of the divine creation as the soul is. Body and mind are intertwined and inseparable in human beings. For the first two centuries Christianity had to battle with the persecution by the State as well as with the Gnostic heresy. However, as Bottomley notes, 'the psychosomatic unity of man is maintained against heretical distortion and there is asseveration of the dignity of the human body.'⁴⁰ From the third century onwards the Fathers of the Church systematically defended the psychophysical unity of man in their writings and teachings by presenting the body in a positive light. Clement of Alexandria (C.E. 150-215), Tertullian (C.E. 160-225) and St Ambrose (C.E. 339-397) have all underlined the meaning and the value of the body and its inseparable unity with the soul.

De Silva agrees that the Greek term *psychē* maintains the holistic character in New Testament as well as the Old Testament. Although sometimes the term is used to refer to feelings and thoughts, nowhere in the New Testament do we find the term being used to denote a Platonic immaterial, immortal soul.⁴¹ *Psychē* describes the physical life of a being, any being, human or non-human. It separates living beings from soulless, inanimate beings, *apsycha*. *Pneuma* (spirit), on the other hand points at

³⁸ Ware, K., 'My helper and my enemy: the body in Greek Christianity', in Sarah Coakley (ed.), *Religion and the Body*, Cambridge: Cambridge University Press, 1997, pp. 90-109 (94).

³⁹ Bultmann, R., *Theology of the New Testament*, vol. 1, New York: Scribner, 1951.

⁴⁰ Bottomley, F., *Attitudes to the Body in Western Christendom*, Cambridge: Cambridge University Press, 1979, p. 58.

⁴¹ De Silva, *The Problem of the Self in Buddhism and Christianity*, p. 81.

spiritual life. While *psychē* expresses the life separated from God, *pneuma* expresses life derived from God. St Paul calls this separated self 'the carnal self'⁴², as opposed to the spiritual self.⁴³ In Orthodox terms we could say that *psychē* is the Image and *pneuma* is what transforms the Image into Likeness; is the constant 'becoming' of the man; man's route towards spiritual life; is the *soma physicon* (natural body) transforming into *soma pneumatikon* (spiritual body). *Pneuma*, says De Silva, is '...the dynamic quality which makes man a person.'⁴⁴

John Macquarrie also stresses the point that spirit should not be understood as a different substance. Christian tradition does not necessarily demand a Cartesian dualism. 'Spirit is not another thing or substance. It belongs in a different category. It is rather a dynamic form, a quality of being that differentiates man (and whatever other spiritual being may exist) from animals, plants, sticks, and stones'⁴⁵. This dynamic form is to be found not only in humans but in the whole creation. Christian theology does not talk only about the human spirit but also about the Divine Spirit. Without a proper understanding of one, one will never be able to comprehend the other.

Paul Tillich sees spirit as a dimension of life⁴⁶; it is what holds together the distinctive parts of a multidimensional reality forming an all-inclusive unity. God's Spirit in the Old Testament is the creative force that makes everything come into being. It is the immanent creative power that still makes things happen. In man, the spirit is what drives him/her to become, to evolve and to advance. This understanding of spirit agrees with the scientific theory of evolution, whilst theologically it offers a

⁴² Romans 8:5-8.

⁴³ De Silva, *The Problem of the Self in Buddhism and Christianity*, p. 89.

⁴⁴ Ibid.

⁴⁵ *Conversations*, Graymoor Ecumenical Institute, Sept. 1969, p. 3 quoted in De Silva, *The Problem of the Self in Buddhism and Christianity*, p. 99.

⁴⁶ Tillich, P., *Systematic Theology*, Vol. III, Welwyn: James Nisbet, 1968, p. 23.

good insight into the mystery of Incarnation, argues De Silva. ‘Thus to link up the Holy Spirit with the immanence of God in His creative activity, and the Incarnation of Christ in His redemptive work, is to link up creation and redemption with the whole process of evolution, which is now seen as the one great increasing purpose of the Creation. We also see here the principle in which ‘all things hold together’ or ‘cohere.’⁴⁷

It is very interesting to note that this evolutionary view of the world can also be found in the writings of the Church Fathers. St Basil the Great and Gregory of Nyssa, two great philosophers of the Orthodox tradition discuss the genesis of the world. They talk about a ‘creative force’ and ‘emergent properties’ (σπερματικές καταβολές) with which God infused the universe. Genesis happened in a moment. Then a dynamic evolution that reveals all that exists in the world, including human beings, begins to be driven by this creative force.⁴⁸ Orthodox tradition distinguishes between creation, actualization and evolution of creation. God is revealed to us through revelation, and charismatic knowledge discloses to us that God is the cause of existence. This charismatic knowledge is not trying to explain scientifically but symbolically the reason of creation. Christian theologians accept God as the unique cause of creation but they turn to science in order to explain and comprehend the way creation is being actualized.⁴⁹

Perceiving human beings as holistic, psychosomatic unities is a view that is in agreement with the traditional Judeo-Christian philosophical anthropology. However, in order to defend such an anthropological view as the philosophical edifice of an ethical theory regarding the moral status of the human embryo in a secular society, it

⁴⁷ De Silva, *The Problem of the Self in Buddhism and Christianity*, p. 92.

⁴⁸ St Basil, ‘Εἰς τὴν Εὐαγγέλιον’ PG 29, 146C-192A, and Gregory of Nyssa ‘Περὶ τῆς Εὐαγγελίας’, PG 44, 72AB.

⁴⁹ Matsoukas, *Dogmatic and Symbolic Theology B*, p. 174.

is necessary to find support in areas outside the Christian domain. In what follows I will explore holism in science and medicine.

Holism in Science

Other disciplines can also offer support for holism. Systems biology theory argues that a system is more than the sum of its parts. In the book titled *Holism in Philosophy of Mind and Philosophy of Physics* Michael Esfeld, Professor of Epistemology and philosophy of Science at the University of Lausanne, attempts to present a general holistic theory. He believes that there is a ‘common conceptual content’ that connects holistic theories in different areas of investigation. Esfeld describes a system as holistic ‘...only if its parts have some of the properties that are characteristic of these things only within the whole.’⁵⁰ The dependence he recognises among the parts of a holistic system is not a “rigid” but a “generic ontological dependence”. By that he means that the parts of a holistic system do not ontologically depend on the existence of other parts of the system. ‘If some parts of the holistic system are removed or replaced, it is nevertheless possible that the remaining parts are the same individuals and that even the system as a whole remains the same system.’⁵¹

The above gives rise to the necessity for a definition of what makes a system holistic. The properties of a holistic system must: (i) be qualitative or pure properties, such that their instantiation does not depend on the existence of any particular

⁵⁰ Esfeld, M., *Holism in Philosophy of Mind and Philosophy of Physics*, Dordrecht; London: Kluwer Academic, 2001, p. 6.

⁵¹ Esfeld, *Holism in Philosophy of Mind and Philosophy of Physics*, p. 8.

individual; (ii) not be disjunctive - that is to say, properties such as “being round or square” are excluded; (iii) be both relational and non-relational and; (iv) the property of *being a* holistic system does not belong to the family of properties that *make* something a holistic system.⁵² In order for a thing to be a constituent part of a holistic system, it needs to have a family of generic, determinable properties and to be arranged with other things in a suitable way. It is important to note that not all parts of a holistic system need to share the same properties given that there is a suitable arrangement.

The human organism is a holistic system, and yet the heart and the liver do not share the same properties. However, the necessary dependence among the constituent parts of a holistic system means that they share some ‘holistic properties’. ‘A relational property is holistic if and only if it satisfies the following two conditions: (1) Instead of being an arrangement property, it belongs to the family of properties that make something a constituent of an S [system] provided that there is a suitable arrangement. (2) Nothing can have this property unless there actually are other things together with which this thing is arranged in such a way that there is an S. For example, meaning is a holistic property if semantic holism is right and a system of beliefs is a holistic system.’⁵³ Esfeld concludes that his proposed notion of a holistic system is a theory that is constructed using tools of analytic philosophy. It is a theory that provides us with strong criteria to help us define cases of holism in different areas of scientific investigation, and hence suggests a re-examination of our philosophical view of the world and ourselves.⁵⁴

Michael Silberstein and John McGeever in an article in *The Philosophical Quarterly* also discuss and defend holism as the most comprehensive theory in their

⁵² Esfeld, *Holism in Philosophy of Mind and Philosophy of Physics*, p. 12.

⁵³ Esfeld, *Holism in Philosophy of Mind and Philosophy of Physics*, p. 16.

⁵⁴ Esfeld, *Holism in Philosophy of Mind and Philosophy of Physics*, p. 27.

search for ontological emergence.⁵⁵ They believe that when it comes to investigating dynamic systems, whether it is in the area of quantum mechanics, chaos theory or in philosophy of mind, a holistic approach of enquiry and explanation can be more accurate than part-whole reductionist theories or theories of mereological supervenience. They also argue that ontological emergence is most likely the best explanation for the occurrence of events and properties that appear as characteristics of systems but which cannot be reduced to mereological properties of the systems' parts; namely properties that only belong to a part and not to the whole system. The 'ontological emergent features' of Silberstein and McGeever is what Esfeld calls 'holistic properties'. 'Ontologically emergent features are features of systems or wholes that possess causal capacities not reducible to any of the intrinsic causal capacities of the parts nor to any of the (reducible) relations between the parts.'⁵⁶

Biology is another area where holism is proposed as a theory that can better describe the complex nature of biological systems. A notorious problem in the area of biology - as well as philosophy of mind - is the mind-body problem. J. Kim in his *Supervenience and Mind* precisely states the core of this problem: 'There are persuasive reasons to believe that the world we live in is a fundamentally material world, a world made up of material particles and their aggregates, all of which behave strictly in accordance with physical law. How can we accommodate minds and mentality in such a world?'⁵⁷ McGeever and Silberstein infer that Kim's puzzlement is based on the fundamental belief of part-whole reductionism, i.e. the belief that the whole is just the sum of its parts. In a reductive physical world mental and spiritual

⁵⁵ Silberstein, M. and McGeever, J., 'The search for ontological emergence', *Philosophical Quarterly*, 1999.

⁵⁶ Silberstein, and McGeever, 'The search for ontological emergence', p. 186.

⁵⁷ Kim, J., *Supervenience and Mind*, Cambridge University Press, 1993, p. 9.

events are very difficult, even impossible to accommodate.⁵⁸ A biological and chemical description of brain activity and transmission of neural signals can give us a very good understanding of the mechanistic function of the brain and the nervous system, but it cannot give any comprehensive answers to why and how thoughts, ideas, beliefs and feelings come about.

Holism, systems biology and ontological emergence theory, on the other hand, could offer a comprehensive solution to this problem by explaining mental and spiritual characteristics as ontologically emergent holistic properties of the human being. The mental and the spiritual are understood as properties of the whole system, not just of one part of it, for example the brain. Mentality and spirituality are also parts of the system and their manifestation becomes apparent through the collaboration of all the parts of the system.

The prominent biologist and physicist Walther Elsasser was one of the founders of the field now called 'systems biology.'⁵⁹ His theory is mainly based on the belief that the immense complexity of organic life hinders the capacity of scientists to make predictions if they are trying to understand the organism by reducing it to its constituent parts. When dealing with systems, a different approach is necessary. He believes that 'an organism is a source of causal chains which cannot be traced beyond a terminal point because they are lost in the unfathomable complexity of the organism'⁶⁰ and that both the molecular and the holistic properties of an

⁵⁸ Silberstein, and McGeever, 'The search for ontological emergence', p. 182-4.

⁵⁹ 'The emerging area of systems biology is a whole-istic approach to understand biology, (Chong, L. and Ray, L. B., 'Whole-istic Biology', *Science*, vol. 295 (5560), 2002, p. 1661). It aims at system-level understanding of biology, and to understand biological systems as a system. This means an examination of the structure of dynamics of cellular and organismal function, rather than the characteristics of isolated parts of a cell or organism (Kitano, H., 'Systems Biology: a brief overview', *Science*, vol. 295 (5560), 2002, pp. 1662-1664). 'Many properties of life arise at the systems level only, as the behavior of the system as a whole cannot be explain by its constituent parts.' *What is Systems Biology?*, viewed on 17/11/07, <http://www.sysbio.de/info/background/WhatIs.shtml>.

⁶⁰ Elsasser, W. M. *Reflections on a theory of Organisms: Holism in Biology*, Baltimore: Johns Hopkins Press, 1998, p. 37.

organism should be investigated. By ‘unfathomable complexity’ he means all those characteristics of organic life that cannot be reduced to physics and chemistry, and hence cannot be investigated with reductive methods. ‘It is only by operating at both the reductionist and holistic levels, each forming the other, that the full potential of biological science for understating the living state is brought up...It will be a powerful aid to progress in biology if his [Elsasser’s] thought was widely accepted in the community of researchers and more of them were to apply complementary approaches to biological problems’, writes Harry Rubin in his introduction to the book *Reflections on a Theory of Organisms: Holism in Biology*.⁶¹

Elsasser thought that holism, if it was to be pursued further, could replace reductionism, the theory that all complex systems can be completely understood in terms of their components, and offer a more satisfactory scientific systems theory. He lists three principles that led to the development of holistic thought in biology.⁶² First is the principle of ‘ordered heterogeneity’. Living organisms present a great variety and heterogeneity in the micro-level (molecular level) but in the macro-level they appear orderly. This is what he calls ‘order above heterogeneity’, a type of order alien to traditional physics and chemistry. The second principle is that of ‘creative selection’. This principle derives from the fact that a cell can potentially have many more patterns than those that actually exist in the world. This means that at some point a choice has been made on what kind of patterns there are going to prevail. Elsasser believes that ‘the availability of such a choice is the basic and irreplaceable criterion of holistic or nonmechanistic biology’⁶³. The third principle completes the second one. It offers the criterion for the creative selection and it is called ‘the principle of holistic memory.’ ‘The main point of the third principle is that no

⁶¹ Elsasser, *Reflections on a theory of Organisms*, intro. by Harry Rubin, p. xvi-xvii.

⁶² Elsasser, *Reflections on a Theory of Organisms*, p. 4-11.

⁶³ Elsasser, *Reflections on a Theory of Organisms*, p.5.

mechanism of the transmission of information over time is specified. We therefore postulate here the transmission of information over a time-interval without an intervening device, such as what computer engineers call a “storage” mechanism.’⁶⁴ Hence, holistic memory is the mechanism of information transmission that works along side heredity in the living organism and allows the organism to choose between the numerous patterns of molecular synthesis available.⁶⁵ Elsasser admits that such an idea will be met with disbelief or even horror from his fellow biologists. Nevertheless, he believes that rethinking and re-examining theories is a necessary and vital process of every science, including biology, otherwise progress will never be achieved.

Holism in Medicine

Holistic or Alternative Medicine (Chinese Medicine) is another discipline that perceives the human being in psychosomatic terms. Holistic medicine looks at the patient as a unique individual and takes into consideration his/her physical as well as mental, spiritual and emotional well-being, before recommending any treatment. Medical holism focuses ‘...on the human body in a systemic fashion, privileging the general state of the organism rather than the condition of individual organs. The parts in turn are perceived to have many intense and multidirectional interconnections. In many formulations the whole is said to determine the action of the parts. From this perspective, sickness is regarded as a general disorder of the body even if the disease

⁶⁴ Ibid.

⁶⁵ Elsasser, W. M. *Reflections on a theory of Organisms*, pp. 4-8 and 100-126.

can be classified in terms of, say, local lesions or external etiological agents. Holistic thinking of this sort can operate at the level of systemic biological process or can attempt to incorporate emotions and the psyche into the study and cure of individuals.’⁶⁶

Holistic medicine is more concerned with treating the patient than the disease. By contrast, orthodox or conventional medicine is reductive in its nature. It looks for single causes for diseases and focuses on cure through mass-produced drugs. It views the human body as a machine constructed of different parts that collaborate with each other in order to make the organism function. When malfunction is detected in one of the parts of the body, conventional medicine identifies the problem and attempts to treat the symptom and disease with the use of drugs, radiation or surgery.⁶⁷ Medical holism does not question the important role of science in medicine. However, it underlines the need to incorporate other forms of knowledge, such as historical, clinical and religious experiences and intuition, in addition to analytical procedures.⁶⁸

This bipolarity in medicine, i.e. treating man as a mechanistic object or as a holistic entity, is an old issue. Plato recognised a tendency towards reductionism in medical treatment even at his time and in *Charmides* he advocated the importance of holistic treatment. ‘The cure of a part should not be attempted without treatment of the whole. No attempts should be made to cure the body without the soul, and therefore, if the head and body are to be healthy, you must begin by curing the mind. This is the first thing. Let no one persuade you to cure the head until he has first given

⁶⁶ Lawrence Ch., and Weisz G., ‘Medical Holism: The Context’, in Ch. Lawrence and G. Weisz (eds.), *Greater than the Parts: Holism in Biomedicine, 1920-1950*, New York, Oxford: Oxford University Press, 1998, pp. 1-22 (2).

⁶⁷ Barrie, A., *Holism Homoeopathy Healing and the Hereafter*, Dorset: Wessex Aquarian, 1992.

⁶⁸ Lawrence and Weisz, ‘Medical Holism: The Context’, p. 4.

you his soul to be cured. For this is the great error of our days in the treatment of the human body, that physician first separate the soul from the body.’⁶⁹

East Asian medicine is a practice clearly holistic in its nature that has become increasingly popular in the West. Some of its healing methods have been recognised and accepted by western practitioners. Nowadays, universities and medical schools offer courses on oriental medicine and the degrees are widely recognised. Ted Kaptchuk, Associate Professor of Medicine Harvard Medical School, is an expert in traditional Chinese medicine and one of the first people who tried to introduce the philosophy and practice of Chinese medicine to the Western world by showing that it ‘...is a coherent and independent system of thought and practice that has been developed over two millennia...The Chinese system is not less logical than the Western, just less analytical’.⁷⁰

Chinese medicine starts with the basic idea that a disease or an illness cannot be fully and correctly diagnosed unless the symptoms are situated within the patient’s life and behaviour. A mere cause-effect analysis will fail to give a whole and clear picture of the problem. The system is based on the philosophy of *Yin* and *Yang* theory. ‘In this system of thought, all things are seen as parts of a whole. No entity can ever be isolated from its relationship to other entities; no thing can exist in and of itself.’⁷¹

Independent scientific research has been conducted in order to prove and establish the therapeutic efficacy of holistic medicine by both Chinese and Western scientists. After the Chinese Revolution in 1949, China was quite eager to meet the standards of the developed Western world. Traditional medical practice was

⁶⁹ Plato, ‘Charmides’, in *Plato with an English Translation*, W. R. M. Lamb (ed.), London: William Heinemann LTD; Cambridge Massachusetts: Harvard University Press, 1955, vol. 8, p. 21.

⁷⁰ Kaptchuk, T., *Chinese Medicine: The web that has no weaver*, Rider: London, Sydney, Auckland, Johannesburg, 2000, pp. 2 and 7. A traditional and invaluable book on Chinese medicine is Veith, I., *The Yellow Emperor’s Classic of Internal Medicine*, University of California Press: Berkeley, Los Angeles, London, 2002.

⁷¹ Kaptchuk, *Chinese Medicine*, p. 8.

questioned and scrutinised. A long line of research was undertaken in order to demonstrate whether Chinese medicine could be proven efficacious from a modern perspective. A great number of medical reports were published that supported its effectiveness and the Central Committee of the Communist Party of China decided to keep traditional medicine as a practice equally valuable as modern medicine.⁷² Evaluation of Chinese medicine using modern methods also took place in the West proving the efficacy of treatments such as acupuncture and herbal treatment for conditions like emesis, ophthalmology, otolaryngology, substance abuse, cerebrovascular illnesses, neurological problems, gynaecological complaints, asthma and gastrointestinal problems.⁷³

Holistic medicine has begun to be an accepted method of complementary or alternative treatment in the Western world, for example among patients with cancer⁷⁴ and cardiovascular diseases⁷⁵. Between 2000 and 2006 NHS gave £1.3 million for

⁷² 'Clinical Analysis of 290 Cases of Chronic Glomerular Nephritis Treated with Traditional Herbs', *Chinese Journal of Medicine*, January 1965; 'Observations of the Efficacy of Subcutaneous Acupuncture in Treating 121 Cases of Bronchial Asthma', *Chinese Journal of Medicine*, October 1963; 'Study of Treatment of Early Stage Cervical Carcinoma with Traditional Chinese Herbs, Including Analysis of Treatment Effect on Twenty-Four Cases and a Preliminary Investigation of the Treatment Mechanism', *Journal of Traditional Chinese Medicine*, June 1965; 'Traditional Chinese Medicine Treatment of Angina Pectoris – Report of 112 Cases', *Chinese Medical Journal (English Edition)*, Beijing, May 1977, quoted in Kaptchuk, *Chinese Medicine*, pp. 20-1.

⁷³ Abel, S.M., Barber, H.O., Brian T.D., 'A Study of acupuncture in adult sensorineural hearing loss', *Journal of Otolaryngology*, vol. 6, 1976, pp. 166-172; Al Sadi, M., Newman, B., Julious S.A., 'Acupuncture in the prevention of postoperative nausea and vomiting', *Anaesthesia*, vol. 52, 1997, pp. 658-661; Aune, A., Alraek, T., Lihua, H. et al. 'Acupuncture in the prophylaxis of recurrent lower urinary tract infection in adult women', *Scandinavia Journal of Primary Health Care*, vol. 16, 1998, pp. 37-39; Berlin, J., Erdman, W., David, E., 'Psychosomatic correlations in chronic pain patients using electroacupuncture', *American Journal of Chinese Medicine*, vol. 17, 1989, pp. 85-87; Gerardi, A.U., Dominici, S., Sapia, F., et al. 'Reflexology in respiratory allergies', *Minerva Medica*, vol. 74, 1983, pp. 2521-2531; Batey, R. G., Bensoussan, A., Yi Fan, Y., Bollipo, S., Hossain, M. A., 'Preliminary Report of a Randomized, Double-Blind Placebo-Controlled Trial of a Chinese Herbal Medicine Preparation CH-100 in the Treatment of Chronic Hepatitis C,' *Journal of Gastroenterology and Hepatology*, vol. 13, 1998, pp. 244-247. These and many more trials listed in Kaptchuk, *Chinese Medicine*, Appendix E.

⁷⁴ Xu L., Lao L. X., Ge A., Yu, S., Li J., Mansky P. J. 'Chinese herbal medicine for cancer pain', *Integrative Cancer Therapies*, vol. 6 (3), 2007, pp. 208-34; Dibble S. L., Luce J., Cooper B. A., Israel J., Cohen M., Nussey B., Rugo H., 'Acupressure for chemotherapy-induced nausea and vomiting: a randomized clinical trial', *Oncology Nursing Forum*, vol. 24(4), 2007, pp. 813-20.

⁷⁵ Yeh, G.Y, Davis R.B, Phillips R. S., 'Use of Complementary Therapies in patients with Cardiovascular Disease', *American Journal of Cardiology*, vol. 98 (5), 2006, pp. 673-680; Decker C., Huddleston J., Kosiborod M., Buchanan D. N., Stoner C., Jones A., Banargee S., Spertus J. A., 'Self-

research on the use of complementary and alternative medicine (CAM) for cancer.⁷⁶

A team from Leeds University funded by the NHS gathered data from 26 surveys from 13 countries and they found that an average of 31.4 percent of cancer patients use CAM therapies. The results for the United Kingdom showed that over 30 percent of cancer patients turn to CAM therapies for help. Some of the reasons patients gave for preferring or using CAM alongside conventional treatments are: (i) the limitations of the biomedical method in treating certain conditions; (ii) the holistic approach of alternative medicine that takes into consideration the psychological and physiological factors; (iii) the closer patient/practitioner relationship.⁷⁷

Psychiatric medicine and psychology also recognise that emotional and spiritual factors play an important role for the treatment of patients. The Royal College of Psychiatrists defines spirituality as ‘the essential human, personal and interpersonal dimension, which integrates and transcends the cultural, religious, psychological, social and emotional aspects of the person.’⁷⁸ Psychologists also recognise the spiritual aspect of human life. They believe that ‘personal problems seem to be both psychological and spiritual, and can be approached from either perspective; the two aspects are distinct but complementary.’⁷⁹ Even though conventional practitioners still approach spirituality and holistic healing with great scepticism and question its effectiveness and scientific value, the increasing literature

reported use of Complementary and Alternative Medicine in Patients with previous acute Coronary Syndrome’, *American Journal of Cardiology*, vol. 99 (7), 2007, pp. 930-933.

⁷⁶ ‘Complementary and Alternative Medicine’, Department of Health, viewed on 10/12/07, <http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Complementaryandalternative/medicine/index.htm>.

⁷⁷ Broom A. and Tovey P., ‘Complementary and Alternative Medicine (CAM) and the Care of Patients with Cancer’, National Department of Health, Sept 2003 - June 2006, viewed on 10/12/07, http://www.dh.gov.uk/en/Policyandguidance/Researchanddevelopment/A-Z/NationalNHSRDFunding/DH_4032132.

⁷⁸ ‘Spirituality and Psychiatry Special Interest Group’, The Royal College of Psychiatrists, viewed on 12/07/07, <http://www.rcpsych.ac.uk/college/specialinterestgroups/spirituality.aspx>.

⁷⁹ Bennen, B., *Psychotherapy and the Spiritual Quest*, London: Hodder and Stoughton, 1998, quoted in Watts, F., *Theology and Psychology*, Cambridge: Ashgate, 2002, p. 73.

in scientific journals and the introduction of this topic to the curriculum of medical schools witness the recognition of this aspect of human life from scientists.⁸⁰ Arguably, then, medicine is an area where the holistic theory of human nature is put into practice offering favourable results.

The Theory of Holistic Anthropology

Holistic anthropology maintains that human beings are psychophysical entities and that their different features and capacities are products of the whole system, not just of its parts. This means that cognitive abilities and spirituality, for example, are intrinsic characteristics of human nature, and not merely by-products of brain activity. As previously stated philosophical anthropology is an area of research that aims at disclosing the intrinsic and fundamental nature of the human being. Holistic anthropology is a theory within this area that offers a particular understanding of the human condition; that of a psychophysical whole.

Holism is an alternative to juxtapose dualistic and monistic/materialistic description of the person. Even though it is an old concept, modern science and technology (“modern” refers to the period from the Enlightenment onwards) have greatly influenced philosophical ideas. The mechanistic images of the Industrial

⁸⁰ E.g. Slieper, C. F., Wasson, K., Ramondetta, L. M., ‘From Technician to Professional: Integrating Spirituality into Medical Practice’, *American Journal of Bioethics*, vol. 7 (7), 2007, pp. 26-27; Sprague, S., ‘What Part of Spirituality Don’t You Understand’, *American Journal of Bioethics*, vol. 7 (7), 2007, pp. 26-27; Myss, C. M., Shealy, N. C., *The Creation of Health: Merging Traditional Medicine with Intuitive Diagnosis*, Three Rivers Press, 1993; Janiger, O., Goldberg, P., *A Different kind of Healing: Doctors Speak Candidly About Their Successes With Alternative Medicine*, G. P. Putnam’s Sons, 1993; Krieger D., *Therapeutic Touch as Transpersonal Healing*, Lantern Book, 2002; Cohen, M. H., ‘Healing at the Borderland of Medicine and Religion: Regulating Potential Abuse of Authority by Spiritual Healers’, *Journal of Law and Religion*, vol. 18, (2), 2002-3, pp. 373-426.

Revolution penetrated philosophy and re-shaped peoples' understanding of the universe and of themselves. Monism and dualism dominated science and philosophy because these were the two systems that could correspond to the technological advances of that era. However, some contemporary philosophers and scientists believe that it is time to escape the dictatorship of this monism/dualism controversy and welcome holism as a method of looking at systems as wholes. John Searle, the Professor of Philosophy of Mind at the University of Berkeley believes that it is time for philosophers to abandon the traditional theories of dualism and monism. He believes that '[p]roperly understood, many of the currently fashionable views are inconsistent with what we know about the world both from our own experiences and from the special sciences. To state what we all know to be true, we are going to have to challenge the assumption behind the traditional vocabulary.'⁸¹

Systems biology theory provides us with a scientific/philosophical edifice to support this theory. It offers a valid reason and a good explanation of why materialistic and reductive approaches fail to reveal the true nature of the subject of investigation when this is a system. Holistic medicine, psychiatry and psychology give us empirical evidence of successful application of this theory on an everyday practice. As Braine very eloquently puts it:

'[t]he world in which we mentally live is not a world presented to us in representation only, in experiences which are as if the world were thus and thus but which could have been the same even if the world had been otherwise. Rather we live in real and direct cognitive relation with the world so that the world in which we live is the same as the world in which we act. Our relationship with the world in experience and engagement with it is never that of observers and knowers only, a cognitive relationship only, as if we were centres of consciousness observing the world independently of behavioural adaptation to it.

⁸¹ Searle, J., 'What's Wrong with the Philosophy of Mind?', in Richard Warner and Tadeusz Szubka (eds.), *The Mind-Body Problem: A Guide to the Current Debate*, Oxford: Blackwell, 1994, pp. 277-298 (279).

Rather our forms of engagement and experience are always at once cognitive and behavioural, and this means that they are never purely mental, but always psychophysical - the mental and the physical inextricably intertwined, both logically in the way each is to be described, and from the stand point of explanation in the way each is to be explained.⁸²

Holistic medicine, psychology, psychophysiology - or cognitive neuroscience - and psychiatry investigate and utilize in their therapeutic methods this interface of body and mind. Research outcomes from these areas of medicine and psychology count as empirical evidence towards the veridicality of holistic anthropology.

Implications of holistic anthropology for embryonic stem cell research

If human beings are holistic entities, and this can be supported philosophically, scientifically and empirically, then we can conclude that human embryos are holistic entities, i.e. psychosomatic unities⁸³, too. Some people would argue that early human embryos do not qualify for human organisms because there is not enough collaboration between its parts in order to be regarded as one system. New advances in developmental embryology have shown that this is not true, and that there is organisation and collaboration between the cells of the early embryos right from the two-cell stage (zygote). Hence, if human beings *are* psychosomatic entities and if

⁸² Braine, *The Human Person*, p. 33.

⁸³ I use the term 'psychosomatic' as a generic term that describes human nature. Since human embryos are also human beings then one can refer to them as 'psychosomatic unities' too. I discuss this issue further in Chapter 6.

human embryos *are* human beings then we can conclude that human embryos *are* also psychosomatic entities. Given that the human being is a holistic system we can logically infer that humans start their lives as wholes and end them as wholes as well.

Developmental biology helps us to establish the claim that human beings are holistic systems. Current embryological research has shown that the human embryo is genetically a human individual from the moment of conception. Even though biologists like referring to 'stages of development' '...the delimitation of "stages" is purely arbitrary, for development is a continuous process and one phase merges into another without any real point of demarcation.'⁸⁴ Organization and collaboration within the cells of the pre-embryo starts almost immediately after fertilization and the processes of segregation and differentiation are apparent even as early as the fourth day after conception.⁸⁵ The genetic makeup of the entire human body is defined within the first few hours after the fertilization even when the zygote comprises of only one cell,⁸⁶ and the zygote operates as a system even from the two-cell stage.⁸⁷

Of course, at the zygote stage and even up to a few months after birth the human being can demonstrate very few characteristics that could be considered as indications or signs of personhood. One could argue that it is only after the human being is a fully grown person, with demonstrable mental and cognitive abilities, that he or she should count as a holistic psychosomatic unity. However, holistic systems

⁸⁴ Bradley P., *Human Embryology*, 3rd ed., New York: McGraw-Hill, 1968, p. 49.

⁸⁵ Dianne N. Irving, 'Scientific and Philosophical Expertise: An Evaluation of the Arguments on 'Personhood'', *Linacre Quarterly*, vol. 60, 1993, pp. 18-46; Bradley P., *Human Embryology*, 3rd ed.; Kischer, C. W., 'When Does Human Life Begin? The Final Answer', *Linacre Quarterly*, vol. 70 (4), 2003, pp. 326-339 (329).

⁸⁶ Pearson, H., 'Your Destiny, from Day One', *Nature* 418, 2002, pp. 14-15; Beddington, R. S. P. and Robertson, E. J., 'Axis Development and Early Asymmetry in Mammals', *Cell*, vol. 96, 1999, pp. 195-209. Norman Ford takes exception to the expression 'blueprint', if this means the zygotic genotype is a miniature performed human individual, even though no one actually advocates that concept of embryonic organization. Ford, N., *The Prenatal Person: ethics from conception to birth*, Malden, Mass.; Oxford: Blackwell Publishers, 2002, p. 67.

⁸⁷ Haldane, J. and Lee, P., 'Rational Souls and the Beginning of Life (A Reply to Robert Pasnau)', *Philosophy*, vol. 78, 2003, pp. 532-541 (537).

theory holds that emergent properties occur only through the collaboration and interrelation of the composite parts of the system. The mind is an ontological emergent property of the human being and ‘...since we are not consciousness inhabiting bodies but are physical organisms possessing from the beginning human (i.e. rational) nature...it follows that we came to be when these physical organisms came to be. And the science of embryology does determine when that occurs - namely, conception.’⁸⁸

Concluding Remarks

This long discussion, which has examined a wide variety of arguments from different areas of research in support of holism, has been undertaken in order to establish the position, central to this thesis, that holistic anthropology can offer a comprehensive account of human nature. It describes human beings fundamentally as psychosomatic unities. However, is it possible by looking at the fundamental nature of a being to arrive at any conclusions regarding its moral status? John Harris believes that the only valid indicator of moral worth is personhood. The nature of a being, and by that he means the species membership of the being, does not carry any moral weight and should not be a marker for full moral value. Mary Warnock on the other hand,

⁸⁸ ‘What is unique about the human being is the fact that he or she is a rational animal, and that is why it is so important to distinguish between the actual perceptual cognition and potential conceptual thought when comparing humans to other animals. In effect, the defining quality or activity of human nature is (rational) conceptual thinking, and this unique capacity differentiates humans from all the sentient creatures’, Lee, P., and George, R. P. ‘Dualistic Illusions’, *First Things*, vol. 150, 2005, pp. 5-7, citation at p. 7; also see: Haldane, J., ‘Rational and Other Animals’, in A. O’Hear (ed.), *Verstehen and Humane Understanding*, Cambridge: Cambridge University Press, 1996, pp. 17-281.

believes that being human has a great moral value and all human beings that count as human individuals should be considered as persons with full moral rights. Both views exhibit both strengths and weaknesses at the same time. It is true that just being a member of the species *homo sapiens* is not enough reason to endow someone with 'full moral value', and yet this need not imply that being human is a morally valueless state.

As discussed above, the importance of the difference between 'full moral value' and 'intrinsic moral value' becomes fully significant when consideration is been given to the moral status of embryos. Human embryos are also human beings, which means that their intrinsic nature does not differ from that of an adult human person. In virtue of their intrinsic nature, then, human embryos, like any other human being, also deserve to be given the basic level of moral worth: intrinsic moral value. However, it is essential once more to note that 'full moral value' and 'intrinsic moral value' are two terms that refer to two different moral positions. Therefore, it is important to distinguish between these two terms.

'Full moral status' is a derivative condition; it is a collective term that refers to a group of different qualities that bestow upon the being's absolute moral worth; the kind of value that makes the being inviolable. Healthy, fully-fledged human beings are perceived as bearers of absolute moral value because of their cognitive and mental capacities, their ability to use language, the relationships they have formed, even their social status. Arguably, the human embryo has very few, if any, of the aforementioned qualities. Consequently, trying to establish the same level of moral worth for the human embryo as that of adult human persons by using personhood characteristics as a criterion of judgment is a vain process. However, the fact that a being does not have sufficient traits to support full moral worth does not mean it has

no moral value at all. 'Being human' could be considered an adequate criterion to grant embryos 'intrinsic moral value'. Even though the early stage of development does not allow human embryos to 'compete in equal terms' with fully developed human persons on the field of full moral rights, their fundamental nature can rescue them from being regarded as valueless material.

By 'intrinsic moral value' is meant the kind of value a thing has for its own sake which is not dependent on the presence of any other qualities or attributes. G. E. Moore was one of the first and most influential contemporary ethical philosophers to deal with the concept of intrinsic value. He argued that the intrinsic value of a being needs to rely on its intrinsic and unchangeable nature. But what is our intrinsic and unchangeable nature, or to put it differently what are we fundamentally? There are many approaches which can be adopted to answer this question but three are of particular relevance to this thesis, viz.: (i) that we are fundamentally persons (personalism); (ii) that we are fundamentally human individuals (individualism); and (iii) that we are fundamentally psychosomatic unities (holism). Whilst, each of these proposed theories has its strengths and its weaknesses, the tenet of this thesis is that the third answer is the preferable one.

Holistic anthropology offers an account regarding human nature that takes into consideration all the different facets of human life: namely the physical and the mental/spiritual. Holism recognizes that these three features are integral and fundamental to human life. Human beings share a lot of qualities and characteristics, physical and mental, with other species. This is the reason why some find it difficult to pinpoint what it is exactly that differentiates humans from other living beings. When looking at only one aspect of human beings, either the biological or the psychological, the boundaries between different species become blurry and vague.

Holism, on the other hand, approaches the human being as a whole and not as a composite of different parts that needs to be deconstructed. Human is a living being (ov) with the ability for mental and spiritual life. Holism is a theory that is philosophically tenable and in agreement with the new scientific discoveries regarding the development of human beings. Hence, it can offer a valid alternative anthropological theory and avoid some of the pitfalls personalism and individualism/animalism seem to fall into.

In this chapter I discussed the Christian theory of holistic anthropology. I showed that even though dualistic concepts regarding the human nature have penetrated Christian thought and became popular among particular Christian circles, holistic anthropology, namely the idea, stemming from the old Judeo-Christian tradition, that human beings are psychosomatic unities, still remains a widely accepted anthropological theory of Christian philosophy. I demonstrated that holism is not a concept that solely exists in Christian thought. I explored holism within the area of biology and systems theory and I indicated how this concept is used and advanced in this scientific field. I also brought examples from the area of medicine. I showed how the idea of understanding human life in psychosomatic terms is applied in the everyday practice of medicine, psychology and psychiatry. By examining holism in areas outside the Christian tradition I confirmed that this theory need not be considered only as a by-product of Christian doctrinal teaching, but as a general theory that reflects reality and can be used as an alternative to other, more popular secular anthropological theories. Finally, I argued that, when discussing the moral status of human embryos, one needs to make a distinction between the 'intrinsic value' of the being and the 'full moral status' of persons. Intrinsic moral value is attributed in virtue of the fundamental nature of a being, whereas full moral value is a

derivative of a cluster of qualities and characteristics commonly found in persons. Holistic anthropology more fully explains the nature of human life and makes clear that human embryos possess intrinsic moral value.

In the next chapter, through a comparative evaluation of the theories of Harris, Warnock and Engelhardt, it will be shown in detail that by revealing or establishing the intrinsic nature of the human embryo, it is possible to demonstrate the intrinsic moral value of human embryos. I will discuss more fully the distinction between the terms 'full moral status' and 'intrinsic moral value'. I will argue that whereas full moral status is a compilation of different factors (societal, relational, utility etc.) and can increase and/or decrease through one's lifetime, intrinsic value is based on one's intrinsic/fundamental nature and stays the same throughout one's life. I will conclude that intrinsic moral status is a basic level of morality that gives fundamental (yet not absolute) value to its bearer. I will propose that although intrinsic morality does not make human embryos inviolable, it makes them more valuable than any other inanimate or animate matter which scientists may propose to use in laboratories for biomedical experiments.

Chapter 6

EVALUATION OF THE THEORIES OF PERSONALISM, INDIVIDUALISM AND HOLISM

Introduction

In this chapter I will attempt an evaluation of the theories of ‘personalism’ as presented by John Harris and Tristram Engelhardt for the secular society; ‘individualism’ as offered by Mary Warnock, and finally ‘holism’ as argued for in the previous chapter. Also, the concept of intrinsic moral value in relation to the concept of intrinsic nature will be discussed in depth. I will demonstrate that intrinsic value depends on the intrinsic nature of beings, and that there is a marked difference between the notions of ‘full moral status’

and ‘intrinsic moral value.’ I will show that this distinction is paramount when considering the question of the moral status of the human embryo.

It is clear that human embryos do not have the same capacities as healthy adult human persons and that their moral status cannot be identical. Adult human beings have full moral value, which is a relation of the intrinsic, personal, societal, relational and utility value they hold. Human embryos, on the other hand are comparable to adult human persons only in regards of their nature, i.e. the fact that both are members of the same species; they are human beings. Therefore, I will argue, human embryos have intrinsic moral value.

Intrinsic value is the value that a being or a thing has in itself, as a result of its particular nature. The concept of intrinsic value has been used by some thinkers in bioethics in relation to the debate regarding the moral status of the human embryos. Richard Doerflinger discussing the ethics of funding human embryonic stem cell research notes: ‘...an abortion does not change the intrinsic status or worth of the unborn child, or justify a government decision to do harm of its own to a human subject. It is difficult to see why this federal policy should not apply to the “embryo-to-be-discarded” just as it does to the “fetus-to-be-aborted.”’¹ Also, the Health Council of the Netherlands suggests: ‘...the embryo has intrinsic value on the basis of which it deserves respect.’² As Catherine Stanton and John Harris note: ‘What matters ethically is not whether or not people do accord this sort of respect but whether or not they are justified in so doing.’³ I

¹ Doerflinger, R., ‘The Ethics of Funding Embryonic Stem Cell Research: A Catholic Viewpoint’, *Kennedy Institute of Ethics Journal*, vol. 9 (2), 1999, pp. 137-150 (143).

² National Consultative Ethics Committee, Opinion on the Preliminary Draft Revision of the Law on Bioethics, Opinion No 67, Paris: CCNE, 2001.

³ Stanton, C. and Harris, J., ‘The moral status of the embryo post-Dolly’, *Journal of Medical Ethics*, vol. 31, 2005, pp. 221-223.

will argue that holistic anthropology offers a justification for the intrinsic moral value of the human embryo. Intrinsic moral value, I will suggest, requires from us to treat the human embryo with respect but it does not render it inviolable. In my discussion, I will refer to G. E. Moore's definition of intrinsic value.⁴

Moore argues that intrinsic moral value should be based on one's intrinsic nature. Faculties and capacities that come and go throughout one's life cannot be indications of intrinsic morality. Hence, in order to establish whether human embryos have any intrinsic moral value, we need to look at the intrinsic nature of human beings. By intrinsic nature, I mean what it is that makes us what we are fundamentally. It is the concept that reveals the essence of a thing/being. It refers to qualities or characteristics 'belonging to the thing in itself, or by its very nature.'⁵

The concept of 'human nature' is a very complicated and difficult one to define. Different understandings and definitions of what is or what constitutes human nature have been proposed. Human nature has been mainly understood as a set of characteristics and qualities that are essential to human kind and distinguish humans from other kinds of beings.⁶ Some thinkers have described human nature as something fixed and given, which cannot be, or should not be, changed, either because what is natural is always good and preferable, or because human nature provides us with a coherent normative

⁴ G. E. Moore is not the only or the first philosopher who dealt with this question. As it is common in philosophy, his theory was met with approval from some, and with objections and criticism from others. Yet, it seems that the objections and criticism were directed not at his definition of intrinsic value as such, but at the way he applied it. For example, Michael J. Zimmerman, Christine M. Korsgaard and others that have criticised Moore's theory, are objecting to the justifications and explanations he gives in order to establish the 'intrinsic value of goodness'; yet, they all seem to agree that intrinsic value should be a value that is neither relational nor instrumental, and must derive from the intrinsic and unchangeable nature of the being/thing in question. I am not going to deal with the question of whether Moore's argument for the intrinsic value of goodness is correct. I am, however, going to use his definition of intrinsic value because I find it to be the most articulate and complete and the one that best encapsulates the meaning of the term.

⁵ Oxford English Dictionary, Edition 2008.

⁶ Buchanan, A., 'Human nature and enhancement', *Bioethics*, vol. 23 (3), 2009, pp. 141-150.

perspective of what is good. Changing human nature, they fear, might result in losing our ability to make sound moral judgements for what is good for humans.⁷

Others, mainly those coming from the evolutionary biology field, have perceived human nature as a flux and evolving condition. In evolutionary biology terms, human nature is defined by a set of dispositions and traits that human beings have acquired through evolution. Natural selection has led human beings to develop characteristics such as selfishness, tendency to have biases against members of other groups, or sociability. These characteristics have been ‘hard-wired’ in our biology so that their occurrence is innate as well as to some degree, perhaps a lesser degree, learnt.⁸ Evolutionary biology does not make claims about the goodness or moral worth of characteristics; instead it focuses on the concept of fitness. Morally ‘bad’ traits such as selfishness and lack of empathy can be considered ‘good’ in evolutionary terms, if they aid the survival and the proliferation of a particular species over others.

Nature has also been contrasted to nurture, culture or convention. Culture and conventions are understood as constructions of societies in particular historical and political settings and therefore, temporary and changeable. Nature, on the other hand is perceived as something external and given. Some thinkers argued that moral norms should be based on, or derived from our nature, as nature can be the only common and acceptable point of reference across people, disciplines and cultures.⁹ Others, on the other hand, believe that moral rules cannot be derived from natural facts. ‘Is’ cannot lead to

⁷ See for example: Habermas, J., *The Future of Human Nature*, Cambridge: Polity, 2003; Fukuyama, F., *Our Post-Human Future: Consequences of the Biotechnology Revolution*, New York: Farrar, Strauss & Giroux, 2002.

⁸ Buchanan, ‘Human nature and enhancement’, p. 142.

⁹ Williams, B., ‘Hylomorphism’, *Oxford Studies in Ancient Philosophy*, vol. 4, 1986, pp. 189-199.

‘ought’. Hume discussed this problem in his *A Treatise of Human Nature*.¹⁰ Moore defended a similar view that he called naturalistic fallacy. He argued in his book *Principia Ethica* that one cannot make ethical claims by appealing to a definition of ‘good’ in terms of natural properties.¹¹

In Christian tradition human nature is understood as both a fixed and dynamic concept. Human beings are endowed with particular characteristics by God; that is the divine Image, which is fixed and given. Human nature also appears to have a dynamic, evolving character. Humans will be able to fully actualize their nature only when they manage to reach divine Likeness and achieve theosis. Human nature, at its current stage, has both virtues and vices. Human beings need to enhance their nature by building upon their virtues and managing their vices as a way to actualize their natural potential.

John Harris argues that we are fundamentally persons. It is important to note that he does not distinguish between ‘full moral status’ and ‘intrinsic value’. He believes that there are only two kinds of moral value: direct or full moral value and indirect moral value. Human nature does not have a normative force and therefore, only persons have direct moral value. Everything and everybody else has indirect value. This means that our only obligation towards the latter group is not to inflict unnecessary pain. Entities with indirect moral value have no claim to life. Harris’ theory and Engelhardt’s, since Engelhardt also supports this theory for the secular society, could lead to a number of controversial and counter-intuitive ethical practices such as infanticide, organ-harvesting from people in persistent vegetative state (PVS), use of severely mentally handicapped people for experiments, etc.

¹⁰ Hume, D., *A Treatise of human nature*, D. F. Norton and M. J. Norton (eds.), Oxford: Oxford University Press, 2000.

¹¹ Moore, G. E., *Principia Ethica*, rev. ed., Cambridge: Cambridge University Press, 1993.

Mary Warnock argues that we are fundamentally individuals. For her being human is morally important; yet, one needs to be a particular human individual. Individuality is what makes us morally valuable and this is something we acquire after the fourteenth day of gestation when twinning is no longer possible and the formation of the primitive streak has started. It is based on the assumption that the pre-fourteenth day embryo does not count as an individual organism since there is no collaboration between its parts. Animalism, the theory that suggests that what we are fundamentally is human animals, also agrees with this view. However, new advances in developmental embryology have shown that the divisibility argument, which maintains that the early human embryo does not count as an individual organism, is false and that there is sufficient collaboration within the early embryo to make it an organism. Therefore, Warnock's position is scientifically unjustifiable and does not offer us a good reason for not recognising the 'individuality' of the early human embryo.

The last theory I am going to consider in this chapter is that of 'holism'. Holism argues that what we are fundamentally is psychosomatic unities. This is how we start and this is how we end our lives. Everything that can make us intrinsically valuable exists right from the beginning until the end of our lives. The way that the concept of human nature is used in this thesis is very close to the Christian model. Human nature is viewed as a given –that is, all human beings are psychosomatic unities– but retains its evolving, dynamic character by suggesting that humans do not fulfil their natural potential until they reach a mature stage. Human nature described as a psychosomatic unity is the 'form' that all human beings share. It is that which makes a thing what it is. From there all their actual potentials derive. The level and extent to which each one person will be

able to evolve and develop depends both on their fundamental, holistic nature and on nurture. I will use the concept of human nature as a normative concept only to the extent that it demonstrates and underlines the genus of the beings we are dealing with. Beyond this point, human nature will come into the ethical debate 'not as an external fixed point, but as a humanly experienced context for human lives, evolving [... and], yet relatively constant, presenting certain possibility and foreclosing others.'¹² I will argue that one cannot infer full moral value to human embryos merely from the fact that they are human beings. The fact that they are human beings obliges us to a specific moral behaviour towards them, but one that is in accordance with their fundamental nature, and also, to their particular characteristics and capabilities (or lack of them).

I will show that holism as a theory accords with the science of developmental embryology, and is philosophically and empirically sound. Holism can be supported both scientifically and empirically. As argued in the previous chapter, biology and systems theory provide us with a valid justification for why it is better to consider living organisms as 'more than the sum of their parts.' I also demonstrated how the view that human beings are psychosomatic unities is confirmed through methods and applications used in holistic medicine, psychology and psychiatry. Moreover, holism agrees with most people's intuition regarding human life and human embryos, as well as with scientific evidence regarding human development. Hence, Engelhardt's position that holism is untenable outside of a Christian edifice is shown to be unjustifiable. It is not only the doctrine of Divine Creation that validates such a view; secular arguments can also be

¹² Nussbaum, M, 'Aristotle on human nature and the foundations of ethics', in J. E. J. Altham and Ross Harrison (eds), *World, Mind and Ethics: essays on the ethical philosophy of Bernard Williams*, Cambridge: Cambridge University Press, 1995, pp. 86-131(120-121).

used to substantiate holistic anthropology; because, as I will argue in this chapter, holistic anthropology reveals the intrinsic nature of human life.

I would like to note that no individual section will be dedicated to Engelhardt's view. Since the theory he suggests for his moral strangers is similar to that of John Harris' these theories will be discussed together in the section on 'Personalism'. The holistic theory he proposes for his moral friends will be discussed in the section 'Holism'.

Intrinsic Nature and Intrinsic Moral Value

It is essential to be clear what the terms 'intrinsic value' and 'full moral status' are referring to and to underline the important difference between these two terms. It is common for philosophers and ethicists working in the area of bioethics and especially for those concerned with the discussion regarding the moral status of the human embryo to use the terms 'intrinsic value' and 'full moral value' interchangeably, as if they refer to one and the same thing. Robert P. George for example in his article 'The Moral Status of the Human Embryo' where he discusses the issue of the onset of human life and the moral status of the human embryo writes; 'But does this mean that the human embryo is a human being deserving of *full moral respect* such that it may not legitimately be used as a mere means to benefit others? To deny that embryonic human beings deserve full respect, one must suppose that not every whole living human being is deserving of full respect. ...We submit that this position is untenable. It is clear that one need not be *actually*

conscious, reasoning, deliberating, making choices, etc., in order to be a human being who deserves full moral respect, for it is clear that people who are asleep or in reversible comas deserve such respect.’¹³ Also, Patrick Lee and Robert P. Georges write: ‘Every human being, irrespective of age, size, condition of dependency, or stage of development - or the means by which he or she is produced - is intrinsically valuable as a subject of rights and deserves full moral respect.’¹⁴ Examples like this one are very common in the bioethics literature and have led to a preconception that ‘full moral value’ and ‘intrinsic value’ are synonyms. For this reason the confusion of these terms largely goes unnoticed. However, after a more careful consideration, it becomes clear that these two terms are referring to two quite different concepts and should be distinguished from each other.

Human embryos cannot compete in the same arena with human persons for an equal value of moral worth. However, it can be argued that their existence is not completely valueless. It is generally accepted, and quite rightly, that human persons have full moral status. Human persons are sentient, self-aware beings with developed cognitive capacities and the ability to use language. They can consider themselves in space and time and can demonstrate special interest in the continuation of their lives. They can anticipate the future, make plans and decide to act accordingly. They are able to form relationships and they can contribute to the general good of society. This list, whilst not an exhaustive one, indicates some of the reasons commonly given to support full moral value for human persons. Full moral value, then, is a composite term; it refers to a cluster of qualities, abilities and attributes. Each one of them indicates the presence of a different

¹³ George, R. P., Gomez-Lobo, A., ‘The Moral Status of the Human Embryo’, *Perspective in Biology and Medicine*, vol. 48 (2), 2005, pp. 201-210 (202).

¹⁴ Lee, P. and George, R. P. ‘Human-Embryo Liberation: A reply to Peter Singer’, 25 January 2006 National Review Online, viewed on 1/5/2008
http://www.nationalreview.com/comment/lee_george200601250829.asp.

kind of value. Hence, full moral status is a combination of values such as personal value, societal value, relational value, utility value etc.

Human embryos, unlike human persons, have few, if any of the aforementioned capacities and qualities. It is almost impossible to defend convincingly the position that human embryos have the ability to value their own existence in the way that a twenty-five year old person could. A human embryo is an instance of human life at a very early stage and all the qualities that could offer someone societal, relational or utility value, are absent. Hence, it is very difficult to argue for the *full* moral status of human embryos on these grounds. Those who choose to do so typically base their theory on something other than the current characteristics and capacities of the human embryo. For example, the position of the Catholic Church makes an appeal for the divine origin of human life in order to establish *full* moral value for *all* human beings.

The Roman Catholic Church is one of the most fervent proponents of full moral worth of human embryos. According to the Christian Catholic tradition all human beings have ultimate moral value because they are all created by God and they are infused with a human soul exactly at the moment of their conception. The presence of the soul makes the communication between the Creator and the creature possible; since the soul is present right from the beginning of human life, the embryo is recognised by God as an individual and unique person. This makes the destruction of any instance of human life, according to Roman Catholic Church, gravely immoral. Yet, outside this or any similar metaphysical framework, it is difficult to argue for the moral equation of human embryos and adult healthy human persons.

If what we are trying to establish is whether human embryos have ultimate value equivalent to that of human persons, and if we are trying to settle this by using cognitive capacities as our basic criterion, it is inevitable that we are going to arrive at a negative conclusion. However, even though embryos cannot “tick the boxes” required for full moral value, this does not mean that considering them as valueless is the only other possible alternative. Notably, accepting that there is some level of moral value in human life regardless of its cognitive capacities is a belief in tandem with the general intuition. It seems that most people are more comfortable with assuming that human life is valuable than the opposite. Mary Warnock believes it is rational and justifiable for people to hold that human life is valuable.¹⁵

John Harris, on the other hand, believes the exact opposite. He argues that such a belief is a clear demonstration of unjust and discriminatory behaviour, and for that reason irrational, unjustifiable and immoral. In his article ‘Stem cell research, personhood and sentience’ Harris argues that human embryos cannot have any kind of direct value; only indirect value is appropriate for them.¹⁶ He states that harming an embryo, even an embryo someone cares about, is morally equivalent to breaking someone’s favourite mug. No harm is done to the embryo itself, since it cannot value its own life in the same way as you and I can value ours. One can only argue that by killing an embryo an indirect harm has been caused to the person that cared for it, given that such a person exists, the same way that an indirect harm is caused to a person when his/her favourite object is destroyed.

¹⁵ See Chapter 3 of this thesis.

¹⁶ Harris, J. and Bortolotti, L., ‘Stem cell research, personhood and sentience’, *Reproductive BioMedicine Online*, vol. 10, Suppl. 1, 2005, pp. 68-75.

Perhaps it seems irrational to morally equate human persons and early human embryos, but it seems equally irrational to argue that human embryos have as much value as a piece of glass or a stone. Species membership might not be enough to make embryos sacrosanct; however, their fundamental nature, it is argued, constitutes adequate reason to elevate them from the level of inanimate objects or non-human embryos. It is in virtue of their intrinsic nature that human embryos acquire intrinsic value. By intrinsic value I mean a level of value that does not translate into full moral worth but endows the “being” with a basic level of moral value that is fundamental and cannot be lost. It is the kind of value a thing has “in itself,” or “for its’ own sake,” or “as such,” or “in its own right”.¹⁷

Having demonstrated the distinction between intrinsic value and full moral value, and clarified why it is important to discuss intrinsic value when referring to the moral value of human embryos, I will continue by explaining what precisely intrinsic value is. In order to do this, I will use G. E. Moore’s definition of intrinsic value.

Intrinsic value, Moore argues, is directly connected to, and defined by, the nature of the being/thing in question. ‘To say that a kind of value is ‘intrinsic’ means merely that the question whether a thing possesses it, and in what degree it possesses it, depends solely on the intrinsic nature of the thing in question.’¹⁸ By this he means that the value of a “being” should be dependent on its fundamental nature and not on the particular circumstances in which the “being” finds itself. Hence, the same thing will have the same intrinsic value in any possible world. Christine Korsgaard, Professor of Philosophy at Harvard University also agrees with this definition. ‘Intrinsically good things (at least

¹⁷ Zimmerman, M. J. ‘Intrinsic vs. Extrinsic Value’, in Edward N. Zalta (ed.), *The Stanford Encyclopaedia of Philosophy*, Fall 2008 Edition, URL = <<http://plato.stanford.edu/archives/fall2008/entries/value-intrinsic-extrinsic/>>.

¹⁸ Moore, G. E., ‘The Conception of Intrinsic Value’, in James Rachels (ed.), *Ethical Theory 1: The Question of Objectivity*, Oxford: Oxford University Press, 1998, pp. 28-42 (32).

when 'intrinsic' retains its significance) are thought to have their value in themselves, they are thought to have their goodness in any and all circumstances - to carry it with them, so to speak. If you find that a certain kind of thing is not good in any and all circumstances, that it is good in some cases and not others, its goodness is extrinsic-it is derived from or dependent upon the circumstances.'¹⁹ Moore goes on and breaks the notion 'intrinsic value' into two propositions: '(1). It is *impossible* for what is strictly *one and the same* thing to possess that kind of value at one time, or in one set of circumstances, and *not* to possess it at another; and equally *impossible* for it to possess it in one degree at one time, or in one set of circumstances, and to possess it in a different degree at another, or in a different set; and (2) if a given thing possesses any kind of intrinsic value in a certain degree, then not only must that same thing possess it, under all circumstances, in the same degree, but also anything *exactly like* it, must, under all circumstances, possess it in exactly the same degree.'²⁰ Hence, two things that have the same intrinsic nature possess the same intrinsic value.

According to Moore's definition intrinsic value derives from the intrinsic nature of the "being" concerned. One way of discovering the meaning of 'intrinsic value' would be to look at ourselves and isolate the aspect of our existence that really defines us and makes us morally valuable; that which we are fundamentally. We need to identify the particular aspect of human existence that makes us unique and individual human beings and persists through time and space. This is what defines our fundamental identity.

There are many answers to this question; and each one has its defenders and its opponents. Some philosophers have argued that what we are is immaterial spirits and

¹⁹ Korsgaard, Ch. M., 'Two Distinctions in Goodness', *The Philosophical Review*, vol. 92 (2), pp. 169-195 (171).

²⁰ Moore, 'The Conception of Intrinsic Value', p. 33.

others that we are just material bodies. Between these two extremes lie many other possibilities. Within this thesis I will be concerned with the theories which hold that: (i) what we are fundamentally is 'persons', which corresponds to Harris' and Engelhardt's theory for moral strangers; (ii) we are fundamentally 'human individuals', which is Mary Warnock's view, and; (iii) we are 'psychosomatic unities', which is the holistic view.

Personalism

The theory that holds that we are most fundamentally persons is the theory that both John Harris and Engelhardt - for moral strangers - adopt. The main point of this theory is the moral distinction drawn between human beings and human persons. Personhood, not humanhood, is what is morally important. Harris and Engelhardt do not believe species-membership carries any kind of moral weight. They firmly hold the position that our inclination to sympathise more with fellow humans leads us to wrong judgement and to a new form of discrimination that is called 'speciesism.' This means that people tend to value all human beings equally, even when they do not seem to have any of the characteristics and capacities of personal beings, and therefore show a strong preference towards them. Human beings are valued *qua* human beings and this represents a bias to the human species. For John Harris and Tristram Engelhardt, human life as such has no

intrinsic moral value.²¹ It is only when human beings can demonstrate specific personhood traits that they become important and morally valuable. They differentiate between the biological term 'human being' and the moral term 'person' and they base intrinsic moral value on a number of mental qualities. 'Talk about the lives of individuals having moral value refers to the moral reason we have for respecting claims to continued existence made by or on behalf of such creatures.'²² These creatures can 'in principle, be members of any species, or indeed machines, if they have the right sort of capacities.'²³

Harris and Engelhardt do not understand personhood as being distinct from the physical substance. Personhood is described as a property of the physical brain. It is a cluster of characteristics found in adult human beings, which includes self-awareness, ability to consider oneself in space and time, make future plans and use language. Harris' exposition of personhood is very close to that of John Locke's. He actually admits that:

'John Locke attempted to answer this question in a way that has scarcely been surpassed.

He wrote: "we must consider what person stands for; which I think is a thinking intelligent being, that has reason and reflection, and can consider itself the same thinking thing, in different times and places; which it does only by that consciousness which is inseparable from thinking and seems to me essential to it; it being impossible for anyone to perceive without perceiving that he does perceive." (Locke 1690, ch. 27, Book II, p. 188) [...] Thus the question as to which individuals have lives that are valuable in this sense (the ultimate sense) is a threshold one; anyone capable of valuing existence, whether they do or not, is a person in this sense. The possession of this capacity, to whatever degree it is possessed, meets Locke's criteria.'²⁴

²¹ See the discussion of John Harris' position in Chapter 3 and Tristram Engelhardt's in Chapter 4 of this thesis.

²² Harris J., 'The Concept of the Person and the Value of Life', *Kennedy Institute of Ethics Journal*, vol. 9 (4), 1999, pp. 293-308 (294).

²³ Harris, 'The Concept of the Person and the Value of Life', p. 302.

²⁴ Harris, 'The Concept of the Person and the Value of Life', pp. 302-3.

All these attributes would have been impossible to come about unless there is a healthy, fully developed and functioning human brain in place. The brain is the basis of personal existence for Harris and Engelhardt, and personhood can be found among the cells and neurons that form this powerful organ. From there they conclude that beings not in possession of complex brains do not have these qualities, consequently they lack personhood and therefore, they cannot be regarded as independent moral entities.

John Harris does not use the term 'intrinsic moral status'; rather he refers generally to 'moral status' for persons and 'no moral status' for non-persons. Some times he talks about 'ultimate' or 'direct' moral value for beings that have non-derivative ethical value or value in themselves, and 'indirect' moral value for beings that do not have a value in themselves, but only have derivative value that they acquire from others. We can take then 'direct' to refer to what Moore describes as 'intrinsic' value and 'indirect' as 'extrinsic' value.²⁵ So far we have derived two useful conclusions; (i) personhood is the source of intrinsic goodness and; (ii) personhood is a property of the brain. It is quite clear from their writings that neither Harris nor Engelhardt are traditional/Cartesian substance dualists. They both hold personal characteristics to be the hallmark of moral significance but they do not believe that these mental attributes can exist independently of the physical brain. They both subscribe to a reductive property dualistic understanding of the person; 'reductive' because they accept that the mental supervenes on the physical and ontologically depends on it; 'property dualism' because

²⁵ Christine Korsgaard would probably take Harris' term to mean 'final' and not 'intrinsic' but Zimmerman argues that both terms can be taken to refer to the same thing, i.e. intrinsic value. See Korsgaard, 'Two Distinctions in Goodness' and Zimmerman, M. J., *The Nature of Intrinsic Value*, Lanham, MD; Oxford: Rowman and Littlefield, 2001, pp. 22ff.

they accept the existence of two different kinds of properties: physical and mental.²⁶ When it comes to ethical evaluations though, the mental properties overpower any physical ones.

According to Locke's definition of personhood that both Harris and Engelhardt accept, person is a being with the ability to consider itself as the same thing in different times and places. Our intrinsic nature then is what survives temporal and spatial change. Locke believed that what is necessary for identity continuity is not substance but consciousness continuity: 'continuity of a mental history over time where present and past transient moments of awareness are connected by memory.'²⁷ Derek Parfit is one of the most influential contemporary philosophers that support the view that identity continuity is secured only through psychological continuity. Parfit also holds a reductionist view. He maintains that '...a person's existence just consists in the existence of a brain and a body, and the occurrence of a series of interrelated physical and mental events.'²⁸ What is important about personal identity though is not continuity of the body since we can survive organ transplantations, amputations, even, by extension potentially, whole body changes as long as the brain is still alive and functioning. Yet, the value of the brain is not intrinsic but derivative of what it offers: a place for personhood (or Relation R = continuity and/or connectedness with the right kind of cause and

²⁶ Donald Davidson calls the theory that allows us to consider mental properties as distinctive from their subvenient physical properties, but nonetheless totally dependent on them for their existence 'anomalous monism'. Jaegwon Kim believes that anomalous monism is a theory that does not tell us anything about the body-mind relation but just describes a phenomenon. See , Davidson, D., 'Mental Events', in Davidson (ed.), *Essays on Actions and Events*, 2001, p. 214f and Kim, J., *Mind in a Physical World: An essay on the Mind-Body problem and Mental Causation*, MIT Press: Cambridge, Massachusetts 1998, p. 5f.

²⁷ Locke, J., *Essay Concerning Human Understanding*, Oxford: Oxford University Press, 1964; Bk. II, ch. 27, sect. 9, 10,.

²⁸ Parfit, D., *Reasons and Persons*, Oxford: Clarendon Press, 1984, p. 211; De Gracia, *Human Identity and Bioethics*, p. 15.

uniqueness)²⁹ to dwell. 'A brain that no longer supports any form of psychological continuity would not preserve a person.'³⁰

The view that we are fundamentally persons and that personal identity relies on psychological continuity, has a number of strengths. First of all it agrees with our belief that we have knowledge about our identity over time and we can track-back our previous actions and anticipate our future ones. Also it coheres with our intuition that 'we go where our brain goes'. A very common way of testing this intuition is through the famous 'brain-transplant' thought experiment, implicit in Locke's work and widely used by many philosophers in this area. Suppose there is a person 'A' with a healthy body but a failing brain and another person 'B' with a healthy brain but completely diseased body. Both people are destined to die unless action is taken. Doctors decide to perform an operation where they take the healthy brain from person 'B' and transplant it into the body of person 'A'. The operation is successful and the person wakes up. But who of the two people have survived the operation? Is it person 'A' whose body has remained alive, or person 'B' whose brain has remained alive? Most people tend to suppose that the person who survives is the person 'B', whose brain is still alive, and that person 'A' with the healthy body and the dead brain is now dead. Philosophers who use this thought experiment argue that it affirms the validity of the psychological continuity view.³¹

²⁹ Joseph Butler argued that memory cannot be a criterion for personal identity because the existence of memories presupposes the existence of personal identity. Parfit in order to avoid circularity argued that what matters in survival is not identity but Relation R. He also came up with the term quasi-memory; an attribute that does not presuppose identity; Parfit, *Reasons and Persons*, p. 220.

³⁰ Parfit, *Reasons and Persons*, p. 211; De Gracia, *Human Identity and Bioethics*, p. 16.

³¹ Derek Parfit most famously has most famously used this thought experiment, See Parfit, D., *Reasons and Persons*. Jeff McMahan also used this example to argue that we are not identical to our organisms. See: McMahan, J., *The Ethics of Killing: Problems at the Margins of Life*, Oxford, New York: Oxford University Press, 2002, pp. 31ff.

The third strength of the personalist approach is that it offers a good reason why we consider persons to be moral agents. Only persons can be held responsible and accountable for their actions. Also, only persons have the capacity to act intentionally, make future plans and care for their interests. This is exactly the reason why Harris thinks that only persons have moral status (intrinsic or direct). 'The connection between personhood and moral value arises in two principle ways. One of these ways involves the fact that the capacity for self consciousness coupled with a minimum intelligence is not only necessary for moral agency but is also the minimum condition for almost any deliberative behaviour. More significant, however, is the fact that it is these capacities that allow individuals to value existence, to take an interest in their own futures, and to take a view about how important it is for them to experience whatever future existence may be available.'³²

Despite its great attraction the theory of personal continuity via psychological continuity and connectedness does not come without problems and drawbacks. First of all we should consider the position that suggests that only persons can have interests for their future and only if they continue to be persons; i.e. if their psychological identities persist. Harris in support of this position gives as an example the case of Tony Bland. In 1993 the Bland case forced the House of Lords to reconsider the law regarding euthanasia. Tony Bland had suffered a severe brain damage that left him in a persistent vegetative state (PVS). His parents asked for permission to withdraw feeding and hydration in order to allow their son (or their son's body) to die. Lord Keith of Kinkel argued in the House: 'It is, however, perhaps permissible to say that to an individual with no cognitive capacity whatever, and no prospect of ever recovering any such capacity in this world, it must be a

³² Harris, 'The Concept of the Person and the Value of Life', pp. 303-4.

matter of complete indifference whether he lives or dies.’ Harris thought that Lord Keith’s words echoed his definition of personhood as the hallmark of moral existence and he concludes: ‘Persons who want to live are wronged by being killed because they are thereby deprived of something they value ... Nonpersons or potential persons cannot be wronged in this way because death does not deprive them of anything they can value.’³³ Jeff McMahan suggests there is a problem with this position. He argues that it is possible to imagine oneself in a situation where someone has lost his or her psychological identity or personhood but still one can relate to this individual and care for his or her future. ‘If, for example, a person in the early stages of Alzheimer’s Disease knew that in the later stages, after virtually all of his memories, beliefs, and so on had been eliminated, his body would be subjected to terrible physical trauma without the possibility of anaesthesia, we believe that it would be rational for him now to feel at least some fear of that future pain.’³⁴

David DeGrazia points at another problem of personalism. He believes that it does not reveal the real ‘essence’ of human existence. The criteria of identity, he argues, are our tools that reveal the ‘kind of thing we are.’ We can be many different things throughout our lives. I am a university student now, ten years ago I was a pupil and ten years from now I might be a scholar. Even though all of these nouns are referring to a particular kind, none of these describe my real essence, because none of these are essential characteristics of my existence. It is true though that in order for me to be any of these things I *have* to be a person first. Personhood is a necessary prerequisite of all these

³³ Harris, ‘The Concept of the Person and the Value of Life’, pp. 306-7.

³⁴ McMahan, J., ‘The Metaphysics of Brain Death’, *Bioethics* vol. 9 (2), 1995, pp. 92- 126 (110). DeGrazia reaches the same conclusion; see: DeGrazia, D., *Human Identity and Bioethics*, Cambridge: Cambridge University Press, 2005, p. 24.

different states of affairs. However, is personhood my essence? The personalist will answer 'Yes' to this question; what we are fundamentally is *persons*; the moment we lose our personhood we cease to exist. But can personhood be our intrinsic nature? Being a person is a derivative quality and one dependent on the presence of a cluster of qualities and characteristics, such as cognition, ability to use language etc., which above all are dependent on one being a living (human) being. Consequently, personhood cannot be an 'intrinsic value' according to the definition of intrinsic value I gave above. The personalist view, says DeGrazia, denies that one was a new-born baby once and maybe some day will be a human in persistent vegetative state (PVS).

DeGrazia counts five major objections to the personalist position³⁵: (i) the 'fetus problem.' According to personalism we are fundamentally persons, namely people with cognitive and psychological capacities. Human embryos and foetuses do not have these capacities hence, according to personalism we were never embryos or foetuses. 'But that arguably contradicts both common sense and embryology, according to which we human organisms develop as fetuses, are born and continue to develop through infancy, childhood and other stages of life'³⁶; (ii) the problem of explaining the relationship between you, the person, and the early human organism. If we are essentially persons then we can not be numerically identical to the embryo or the foetus that existed before us. But what happened to this organism? Did it die? Did it just disappear without dying? Or does it merely overlap or coincide with you? 'Because the organism is numerically distinct from you (as nothing can precede itself), there are now two distinct beings

³⁵ DeGrazia, *Human Identity and Bioethics*, pp. 31ff.

³⁶ DeGrazia, *Human Identity and Bioethics*, p. 31.

associated with your body. This too is very hard to believe'³⁷; (iii) the problem of explaining the relationship between you and the permanently unconscious being that will succeed you if you enter a PVS [persistent vegetative state] before biological death occurs. Persistent vegetative state is a condition that designates the end of personhood and therefore the end of the person. 'Thus, personalism provokes the question of how the (living) human organism in PVS, your successor, originated.'³⁸ There are two possible answers to this question: the first is that it came into being spontaneously, without being conceived. However, this is not possible because the being in question is a human animal, and animals do not just emerge out of nothing. The second possible answer is that it came into being as the foetus and it was coinciding with you all this time. 'But that would make it a numerically distinct being that currently overlaps you, sharing your matter. This is hard to fathom'³⁹; (iv) the problem of implying that we are not animals. The foetus problem and the person in PVS state problem imply that according to personalism human persons are not and cannot be the animal. 'Thus, Personalism implies that we are not animals at all - apparently contradicting a biological fact'⁴⁰; (v) The problem of counting conscious beings. Not only persons but some animals can be conscious beings. Therefore, human animals are also conscious beings. 'Now, if I am essentially a person and therefore not an animal, then there are now, as I write these words, two conscious beings – both of whom would be substances – sitting in my chair: I, the person, and the distinct human animal. That seems one too many.'⁴¹

³⁷ DeGrazia, *Human Identity and Bioethics*, p. 31.

³⁸ DeGrazia, *Human Identity and Bioethics*, p. 32.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Ibid.

David DeGrazia, who mainly adheres to Eric Olson's thoughts, suggests that a biological approach could solve this problem and give a coherent account of human intrinsic nature. According to the biological view what we are fundamentally is not persons. Personhood is just an attribute of our biological kind. Our intrinsic nature derives from our membership in a specific biological kind, i.e. human kind. First and foremost, before we become persons we are human beings, or 'human animals' to use Olson's preferred term.⁴² 'Our question is what we *actually* (that is, in the actual world) most fundamentally are: what is our basic kind? ...we human persons – and, for that matter, human beings who are not persons – are essentially human *animals*, members of the species *Homo sapiens*.'⁴³ DeGrazia argues that 'What's crucial is that we are essentially animals of *some* kind; we could not transform into plants or a table. ...Rather than regarding personhood as a basic kind, we should regard it as comprising a set of capacities that things of different basic kinds might achieve. On this view, personhood represents merely a phase of our existence.'⁴⁴

As we argued earlier and according to Moore's definition, fundamental nature is the defining factor of intrinsic moral value. Hence, even though having all these attributes and capacities can bestow upon someone personal/relational/societal value etc., personhood cannot be regarded as the definite indicator of intrinsic value. Being a person definitely gives someone full moral status, but being a non-person does not necessarily mean that one is completely valueless. Whether one has a basic level of moral status, namely intrinsic value, can be indicated only by one's fundamental nature.

⁴² Olson, E., *The Human Animal: Personal Identity without Psychology*, New York, Oxford: Oxford University Press, 1999.

⁴³ DeGrazia, *Human Identity and Bioethics*, p. 48.

⁴⁴ DeGrazia, *Human Identity and Bioethics*, p. 49.

Accepting personhood as the sole foundation of any kind of moral value could have some ethical drawbacks. Personalism as a moral theory could be used to justify infanticide as well as disrespectful treatment of people with mental disabilities and illnesses that affect cognitive function. What Harris regards as morally valuable characteristics, the infant does not acquire until more than a year after birth. This means that according to his theory there is *nothing* intrinsically wrong with killing new-born babies, as long as one does not inflict pain on them. Also, someone who has suffered a severe brain damage and has lost all of their personhood capacities could potentially be killed, used for experiments or as an organ donor without any of these actions being rendered immoral.

Many people would find such a suggestion counter-intuitive and deeply disturbing. It seems to be the case that most of us consider and treat small children and old people with dementia as valuable beings, regardless of their mental abilities. Not only do we take care of and protect them, but we also manage to develop meaningful relationships with them. We may not be able to have highly intellectual conversations with them, but this does not make us believe that they are valueless.⁴⁵

⁴⁵ It is worth noting that most societies and traditions continue to honour and respect people even after death.

Individualism

The second theory we examined was that of Mary Warnock's, the 'individualism' position. Mary Warnock takes a different stance to that of John Harris. Warnock uses divisibility, the ability that the embryo has to divide into two individual beings, as the defining factor for moral status. She comes to the conclusion that post-fourteen day embryos, who have lost their divisibility, have *full* moral value, in contrast to pre-fourteen day embryos which are still potentially able to undergo monozygotic twinning and which have *no* direct moral value. Therefore, using early embryos for research is morally permissible. Warnock, like Harris, takes moral value to be an "all or nothing" state. According to her view, human embryos go from *no* moral value to *full* moral value within a day. She too, fails to distinguish between 'intrinsic moral value' and 'full moral value'. She sets 'individuality' as the absolute criterion for moral value.

Even though it is the case that being human has a moral importance for Warnock, as we saw in Chapter 3, this statement is not as clear and straightforward as it first appears to be. There is a need for one important clarification. Being human appears not to be the same as being a 'human being' for Mary Warnock. A being can be of human origin, but not necessarily a human being with moral rights. One needs to be a 'human individual'. Warnock illustrates this distinction by discussing the moral status of the early human embryo. Up until the fourteenth day of gestation a human embryo is a cluster of totipotent cells, which, if separated, can lead to the formation of a whole new human being. This type of division is a frequent phenomenon and it leads to what we call

monozygotic twins. After the fourteenth day the embryo loses its capacity to divide. Also, prior to this day, the cells that form the embryo do not show any signs of differentiation. It is after this stage that the differentiation process begins and the first cells that will later form the primitive streak - the basis of our nervous system - make their appearance.

Warnock believes that these occurrences mark the beginning of the existence of an individual; a specific and unique human being. Before this point we are dealing with an unidentified human existence. Whether this existence will grow to be an individual human being (or two, or none) we do not yet know. These fourteen days of “uncertainty” are enough to deny the early human embryo any moral claims. Warnock concludes that since for these two weeks there is no human individual present, then the use of early embryos for research purposes is morally justified. She maintains that we cannot recognise the moral status of someone that does not exist yet. Warnock’s system attempts to draw a distinction between the terms ‘human organism’ and ‘human being’. The first is a purely biological term, whilst the second is a moral one.

One cannot fail but notice the similarity between the way Warnock treats these terms and the way Harris treats the terms ‘human being’ and ‘human person’. Even though Warnock proclaims the moral importance of being human, she hastens to explain why the early human embryo does not fall into this category. By drawing a line between the pre- and post-fourteenth day embryo, Warnock differentiates between the biological beginning of a human being and the ontological beginning. Up to the fourteenth day the possibility of twinning does not allow us to tell whether we are dealing with one or two individuals. Hence, it cannot be species membership *per se* that allows for intrinsic moral value but something else; i.e. individuality.

It is necessary to note that Warnock does not accord ethical significance to individuality the same way Harris does to personhood. In Harris' theory, personhood is what alters the value of the being and makes it morally significant, but the ethical weight remains with personhood and does not get transferred to the being. The being only borrows ethical weight from personhood. For Warnock the 'being' is what matters more. Individuality is only the catalyst that changes its biology and ontology and makes it morally significant. In this case, the moral weight is added to the being. So, it is not 'individuality' as an abstract notion that matters more, but the 'human individual' as a specific.

Warnock, contrary to Harris, believes that humanity - i.e. being a member of the species *homo sapiens* - is ethically important. It is almost unconceivable to her to think of a world where members of a species do not show preference and special care for their own species. That is, she does not regard such behaviour as unethical but to the contrary, she thinks that it is perfectly normal and even preferable. 'Human being' is not just a biological term but it has moral weight, as well. The fact that someone is a member of the species *Homo sapiens* seems to be enough reason, for Warnock, to endow him/her with moral rights. By comparing Warnock's systems to that of Harris' we can conclude that when it comes to human beings, the former is much more broad and inclusive than the latter. Warnock does not hold a functionalistic understanding of moral worth. She does not present a list of characteristics that humans need to have before they can acquire moral importance. She believes that being a human is enough reason to justify full moral value. She also recognises the fact that humans are by nature favourably predisposed towards members of their own species, probably for the simple reason that they can

identify and empathise with them more easily. She does not believe this attitude to be either irrational, or unjust. It is the expression of a deep embedded intuition that human life *has* an ethical value.⁴⁶

Warnock believes that being a human being is morally significant and it is not the mental characteristics of personhood that signify intrinsic moral value. Even though she tries to explain what individuality accounts for (no possibility for twinning, signs of primitive streak formation), it is not clear what exactly she means by that. Why is it that the possibility for an organism to grow into two distinctive but identical beings hinders the moral importance of the initial being? C. Ward Kischer Emeritus Professor of Cell Biology and Anatomy with specialty in Human Embryology at the University of Arizona informs us that ‘virtually every human embryologist and every major textbook of Human Embryology states that fertilization marks the beginning of the life of the new *individual* human being. [Emphasis added] ...from the moment when the sperm makes contact with the oocyte ...all subsequent development of a living newborn is a *fait accompli*.’⁴⁷

There are mainly two ways to define individuality or personal identity: bodily continuity and psychological continuity. Psychological continuity needs to be ruled out at this early point of human existence. No one can claim to have psychological connection with the early embryo that later became him or her. At this stage there is no brain and no nervous system to support and sustain memories or any other kind of psychological connectedness. Furthermore, as we discussed above a theory of psychological continuity

⁴⁶ Bernard Williams also defended speciesism in his last public lecture at Princeton in 2003 as a response to the arguments of Peter Singer about the unacceptability of ‘speciesism’. See: Williams, B., ‘The Human Prejudice’, in *Philosophy as a Humanistic Discipline*, Princeton, N.J.; Oxford: Princeton University Press, c2006.

⁴⁷ Kischer, C. W., ‘When does human life begin? The Final Answer’, *Linacre Quarterly*, vol. 70 (4), 2003, pp. 326-39 (328).

is not suitable to tell us about what we are fundamentally. On the other hand, though, Warnock cannot be referring to some kind of bodily continuity either, since the science of embryology confirms that fertilization is the beginning of the biological existence of an individual. Although growth and development will enforce major changes to the physical manifestation of each individual, each individual's DNA, remains the same from the point of conception and throughout their existence. Even if twinning occurs, and two identical beings develop from a single conceptus, the two organisms will share the same DNA.

Derek Parfit famously deals with this issue. In his *Reasons and Persons* he discusses personal identity and its relation and dependence to physical and/or psychological continuity by using a hypothetical scenario: '*My Division*. My body is fatally injured, as are the brains of my two brothers. My brain is divided, and each half is successfully transplanted into the body of one of my brothers. Each of the resulting people believes that he is me, seems to remember living my life, has my character, and is in every other way psychologically continuous with me. And he has a body that is very like mine.'⁴⁸ A number of questions rise from such a thought experiment. Does division mean death or survival of 'me'? And, if I have survived, then which of the two resulting persons is 'me'? Parfit discusses all of the possible answers to these questions by giving equal consideration to the theories of psychological continuity and physical continuity, to the 'Cartesian Ego' theory and the 'Reductionist View'. He concludes that the theoretical possibility that a carrier of psychological continuity can be divisible and that one can potentially have the same kind and level of relation and continuity with two people

⁴⁸ Parfit, *Reasons and Persons*, p. 254-255.

proves that personal identity is *not* what matters. '[T]he main conclusion to be drawn is that personal identity is not what matters.'⁴⁹

It is interesting to note that the animalist theory, as presented and supported by DeGrazia and Olson, also supports the individuality view. As we saw above animalism is based on the biological view that we are fundamentally human animals. However, DeGrazia maintains that the early embryo is not yet 'a unique member of our kind, human organism; it may split into more than one or it may combine with another to form an individual with a significantly different genome.'⁵⁰ So, one cannot argue that he or she is numerically identical to the zygote that formed him or her. 'We come into existence some time between the sixteen-cell stage and the time at which differentiation characterizes all portions of the embryo and twinning becomes impossible.'⁵¹ As I argued previously, I do not believe that the possibility of twinning poses an ontological difficulty in trying to track back our origin. Developmental embryology tells us that the human zygote is an organism and that there is sufficient collaboration between its parts, even from the one-cell state, to make it count as one, individual being.⁵² Furthermore, twinning is a natural property of organisms; amoebas can split into two different worms and continue living as independent organisms, but this does not mean that prior to the division there was not an individual organism present. Or as Gómez- Lobo puts it 'This,

⁴⁹ Parfit, *Reasons and Persons*, p. 255.

⁵⁰ DeGrazia, *Human Identity and Bioethics*, p. 248.

⁵¹ DeGrazia, *Human Identity and Bioethics*, p. 253.

⁵² 'Human development begins at fertilization...This highly specialized totipotent cell marked the beginning of each of us as a unique individual.' Moore K. L. and Persaud T. V. N., *The developing human: clinically oriented embryology*, 7th ed., Philadelphia, Pa.: Saunders, 2003, p.16; 'Almost all higher animals start their lives from a single cell, the fertilized ovum (zygote)... The time of fertilization represents the starting point in the life history, or ontogeny, of the individual.' Carlson, B. M., *Patten's Foundations of Embryology*, 6th ed., New York: McGraw-Hill, 1996, p.3; 'Although life is a continuous process, fertilization is a critical landmark because, under ordinary circumstances, a new, genetically distinct human organism is thereby formed...The embryo now exists as a genetic unity.' O'Rahilly R. and Muller F., *Human Embryology and Teratology*, 3rd ed., New York, Chichester: Wiley-Liss, c2001, p. 33.

in fact is a well-known logical fallacy. A stick in my hand is potentially two sticks; I could break it in half. But this does not entail that as long as I do not break it my stick is not one stick.’⁵³

Christian Munthe also discusses the fallacy of regarding twinning as a decisive factor for the moral status of the human embryo in his article ‘Divisibility and the moral status of embryos.’⁵⁴ He uses the thought experiment of ‘divided minds’ to show that indivisibility does not act as a moral factor in any other case apart from the case of embryos. Let us assume that a person’s brain is divided into two and each hemisphere is implanted in a different body resulting in the emergence of two different people. This idea is also used by Parfit when he discusses personal identity. In this case, however, the question is not whether the two resulting people are identical to the original person or not, but whether the two new people should be considered as morally valuable. The answer is ‘yes’. The person that existed before the division had moral status as well as the two people that resulted from the division, even though the division ended the life of the original individual. Hence, he concludes that it is not rational to ‘accord any moral significance to the property of indivisibility in the case of embryos unless we can show that it has some such significance in other cases.’⁵⁵

Munthe notes that the argument from twinning is also used by Pro-life campaigners and Catholic ethicists who want to protect the moral status of the embryo but also wish to be in agreement with science. These groups usually base the moral worth of the human embryo on its potential to grow into an adult person. This potentiality can

⁵³ Gomez-Lobo, A., ‘On the Ethical Evaluation of Stem Cell Research: Remarks on a Paper by N. Knoepffler’, *Kennedy Institute of Ethics Journal*, vol. 14 (1), 2004, pp. 75-80 (79).

⁵⁴ Munthe, Ch., ‘Divisibility and the moral status of embryos’, *Bioethics*, vol. 15 (5/6), 2001, pp. 382-397.

⁵⁵ Munthe, ‘Divisibility and the moral status of embryos’, p. 388.

be present only after ensoulment, and since one cannot be sure whether the early embryo will be one or two 'souls', the early human embryo cannot be considered as a potential person. Norman Ford most famously tried to reconcile the doctrine of ensoulment with twinning. He argued in his book *When did I begin?* that the pre-fourteenth day human embryo is animated but does not possess a rational soul. The capacity for monozygotic twinning and totipotency are both sufficient reasons, argues Ford, for denying that the early embryo satisfies conditions of being a human being.⁵⁶ Also, Joseph Donseel wrote in his article 'Immediate Animation and Delayed Hominization': 'Soul and matter are strictly complementary; as the soul stands higher in the hierarchy of beings, the matter which receives it, which is determined by it, must be more highly organized. Even God cannot put a human soul into a rock, a plant, or a lower animal, any more than He can make the contour of a circle square. ...The early embryo possesses a rudimentary organization, which allows it to perform the operations of nutrition and growth. To such an organization corresponds a vegetative soul.'⁵⁷

However, if potentiality is what is morally important, the ability of the early embryo to give rise to not only one but two potential persons should count in favour of its moral value and not against, argues Munthe. Therefore, he states: '[M]y basic argument against the requirement of indivisibility is straightforward: even if normal adult human beings were to be divisible, they would nevertheless have moral status.'⁵⁸ Parfit's 'Division' thought experiment, also affirms this conclusion. 'After I have had this

⁵⁶ Ford, N. *When did I begin: the human individual in history, philosophy and science*, Cambridge: Cambridge University Press, 1988.

⁵⁷ Donseel, J., 'Immediate animation and delayed hominization', *Theological Studies*, vol. 31 (1), 1970, pp. 76-105 (82).

⁵⁸ Munthe, 'Divisibility and the moral status of embryos', p. 387.

operation, the two 'products' each have all of the features of a person.'⁵⁹ To this I would add "And the moral status".

If the criterion for animalism is 'being of the type we are' - a human organism - and if developmental embryology confirms that the early embryo qualifies as an organism, it becomes unclear why an animalist would want to adopt the individualist view and draw a distinction between the pre-fourteenth and the post-fourteenth day embryo. At the very least it contradicts the basic principle of animalism that is the biological view. It seems, therefore, that if one wants to found intrinsic moral value on the intrinsic nature of human beings, there is no sound biological or philosophical reason to exclude the first fourteen days from the morally valuable life of an individual. Also, as Munthe argues, there is no real reason why one should consider the ability for divisibility as a condition which could deny someone moral status. Warnock supports the view that being human has a moral significance. This is a step in the right direction when considering the intrinsic moral value of being in virtue of their nature. She is much closer to disclosing the intrinsic nature of human beings and hence pinpointing the source of our intrinsic value. If she did not subscribe to the argument that divisibility denies moral value to the early human embryo, her view could also be used to support the intrinsic value of human life. However, the distinction she draws between human beings and human individuals is one that, I argue, cannot be adequately defended either on philosophical or on scientific grounds.

The question of the moral status of the human embryo is not an issue that can be established by contrasting embryos to persons. It is obvious that human embryos are not 'persons', by which I mean self-aware, sentient beings with the ability to make future

⁵⁹ Parfit, *Reasons and Persons*, p. 256.

plans and use language. However, human embryos are not valueless objects either. Personhood might be the decisive factor for *full* moral status but it is not the only feature that can give moral worth to someone. Individuality cannot disqualify embryos from moral worth, either; first, because, human embryos, according to developmental embryology, *are* human individual organisms; second, because individuality, or the ability not to divide into two beings cannot be considered as a morality indicator. Human embryos cannot qualify for full moral worth but can be eligible for a basic level of moral worth, i.e. intrinsic value. Human embryos are individual beings of human origin. Looking at the origin of human embryos purely on biological terms cannot tell us anything about their moral status. Yet, an anthropological theory that describes human nature and discloses aspects of human life that bear moral importance, could justify intrinsic moral value for the human embryo.

Holism

The third option is that of holism as presented in the previous chapter. Tristram Engelhardt subscribes to this theory, but he defends it only for his moral friends, i.e. his fellow Christians. According to the traditional Christian holistic theory, human beings are psychosomatic unities and human life is a result of God's loving action. Human life has absolute moral value and should always be considered inviolable, because humans are created by God according to God's Image and Likeness. Therefore all human beings

should be awarded full moral status right from the moment of their conception until the end of their biological life. According to this view, humans are fundamentally God's creation and God's children and this is what gives them full moral value. God knows us and relates to each and every one of us even when we are at the embryonic stage, and inside our mother's womb. As the Bible states: 'Before I formed thee in the belly I knew thee; and before thou camest forth out of the womb I sanctified thee'⁶⁰. Also 'Thine eyes did see my substance, yet being unperfect; and in thy book all were written, in continuance were fashioned, when none of them.'⁶¹

As we saw in Chapter 4, what Engelhardt proposes for his moral strangers is a secular position that does not differ from that of John Harris'. He believes that holism and the moral status of the human embryo are ideas defensible only within the Christian tradition. Since, in a contemporary multicultural society it is impossible to expect people to follow one particular religious moral guideline, he argues, society should base its ethical reasoning on secular, scientific and easily demonstrated grounds. Therefore, Engelhardt chooses to propose the personalism view for contemporary society. When looking for scientific proofs of personhood and moral value one looks for clear signs of self-awareness, the ability to understand space and time and the ability to differentiate itself from other beings. It is obvious to the observer that a fourteenth-day human embryo cannot demonstrate any of these capacities. It is less developed than any new born mammal. The gap between a healthy adult human being and a human embryo is enormous and unquestionably obvious. Therefore, the human embryo cannot have the same rights and moral value as an adult human being. Engelhardt argues that this is the

⁶⁰ Jer. 1:5 KJV

⁶¹ Ps. 139:16 KJV

generally accepted, logical way of evaluating the moral status of human embryos and it is the one that all rational people should be able to understand and accept. For his moral strangers, then he suggests the adoption of a personalist theory, equivalent to the one defended by John Harris, an ethical theory that recognises full moral status only for persons and considers the human embryo to be completely valueless.

Although Engelhardt believes this is a rational, and probably the most logically comprehensible way of discussing the moral status of the human embryos, he also agrees that it is not the *only* way. He recognises there are numerous moral systems in the world that could offer a different opinion on the topic, and he wants to make space for people, with specific moral and religious beliefs in the contemporary society. However, he believes, religiousness and secularity can co-exist only through separation. The Christian view, for example, sees the human person as a body/mind whole and proclaims the full moral value of the human embryo based on the belief that human life is a gift from God and for that reason deserves to be respected and protected. Hence, Engelhardt argues, Christians who believe the human embryo to be a full human being with full moral rights should have their own committees, their own hospitals and their own institution to deal with all bioethical issues. They should have the option to create special communities where the moral values and ethical canons are dictated by the Bible or the Pope, and they should be left to rule their lives according to these values uninterrupted by the general government. The same should be allowed for Muslims, Hindus, Buddhists and generally for all religion groups.

However, as I argued in the previous chapter with reference to holism, a watertight barrier between religious concepts and secular ideas is not necessary when

religion can leave aside strong doctrinal references and support its claims philosophically and scientifically. If one can show that there is a rational and empirical basis for the philosophical and ethical claims of a religion, then these ideas would have a better chance of reaching outside of their particular religious community, be heard and actively contribute to a secular debate. It has been argued that those who are trying to approach non-believers by concealing or diluting the fundamental beliefs of their religion run the risk of boycotting the foundations of their own religion and shattering its authority. 'They will have either to become moral philosophers with a special interest in "religious" texts and arguments, or become theologians', argues Gustafson.⁶² Also, Brent Waters commenting on the way the United Church of Christ and the Southern Baptist Churches dealt with the human embryonic stem cell research debate notes: '[B]oth resolutions position themselves in respect to policy outcomes they wish to endorse in the ensuing political debates but offer no religious or moral insight that might contribute toward a richer or deeper understanding of the various issues at stake. Thus, perhaps unwittingly, both resolutions reinforce the perception that religious perspectives are not admissible in the arena of public moral discourse.'⁶³

People who choose to use authoritarian or rhetoric language have similarly little chance of influencing or convincing non-believers as have those who conceal their beliefs. Muslim fundamentalism or papal authority could never convince anyone outside of that particular church, and could never be used as strong and acceptable arguments in a secular multicultural society. Societies would never admit to moral rules and ethical

⁶² Gustafson, J. M., 'Theology Confronts Technology and the Life Sciences', in Stephen. E. Lammers and Allen Verhey (eds.), *On Moral Medicine: Theological Perspectives in Medical Ethics*, pp. 46-52 (52).

⁶³ Waters, B., 'The Appropriate Contribution of Religious Communities in the Public Debate on Embryonic Stem Cell Research?', in Brent Waters and Ronald Cole-Turner (eds.), *God and the Embryo: Religious Voices on Stem Cells and Cloning*, Washington D.C.: Georgetown University Press, 2003, pp. 19-28 (26).

guidance from a source that appears to derive its authority not from logic and rational thinking but from obscure, metaphysical beliefs. As Daniel Callahan, co-founder and former director of Hastings Centre, notes: '[t]he demand in Catholicism that, whether one likes the arguments or not, they must be accepted hardly helps. Outsiders note what looks like coercive moral authoritarianism.'⁶⁴ Unless one is a member of a particular religion, it is very difficult for one to make a rational argument for it.⁶⁵ It is very difficult to argue for granting full moral status to human embryos, equivalent to that recognised for fully fledged human beings, outside of the realms of Christianity.

Engelhardt is right to believe that such a radical view would never be accepted by a secular society. Unless one is a member of this particular religion, it is very difficult for one to make a rational argument for it. Also, it is very difficult to argue for a full moral status for the human embryo equivalent to this recognised to fully fledged human beings outside the realms of Christianity. Although, human beings, or at least most of them, manage to reach the level of full moral worth at some point in their lives, this does not necessarily imply that human beings are *fully* morally valuable right from the beginning till the end of their existence.⁶⁶ We consider human persons to be inviolable because they can value their own existence, they have the ability to make future plans and follow them, we can relate to them and develop meaningful relationships with them, etc. All these examples point at different kinds of value, e.g. personal value, relational value, societal

⁶⁴ Callahan, D., 'Promises, promises: is embryonic stem-cell research sound public policy?' *Commonweal*, vol. 132 (1), Jan 14, 2005, pp. 12-14 (14).

⁶⁵ Religiousness and religious beliefs can be, and are rational. (See: Mitchell, B., *The Justification of Religious Belief*, London: McMillan, 1973; Kenny, A., *Faith and Reason*, New York, Guildford: Columbia University Press, 1983.) However, this is different from rationally arguing for a specific doctrine. Acceptance of doctrines also requires the acceptance of the first and most important premise, the existence of God. And faith is something that does not rely on rationality.

⁶⁶ See: DeGrazia, D., 'Must we have full moral status throughout our Existence? A response to Gomez-Lobo', *Kennedy Institute of Ethics Journal*, vol. 17 (4), 2008, pp. 297-310.

value and so on. Recognising that a being is of human origin can award one with basic moral worth but not with inviolability. As mentioned earlier, only if one relates human nature with some metaphysical idea that elevates human life from the realm of a simple natural existence, only then regarding human embryos as sacrosanct could be understandable. Most of the people are comfortable with recognising a minimum level of moral value to human embryos but do not consider killing embryos and killing adult human beings as morally equivalent.

Despite Engelhardt's strong belief in Christianity, there is an element in his argument that seems to be in opposition to his own religious convictions. He argues for a secular society with maximum tolerance and minimum cooperation between its members. Engelhardt is a Christian Orthodox and the traditional tactic of the Christian Church is not to be introvert but open and extrovert. Forced conversion, of course, is not a Christian praxis and, even though it has been used in the past, it has been condemned by all Churches. On the other hand, evangelizing and communicating the word of God was always regarded as a 'duty' for the good Christian.

The call for evangelisation was given by Jesus Christ to his disciples and has been maintained for centuries. It is based on the belief that people should become familiar with the word of God so they can make an informed choice of whether they want to follow it or not. Christianity, like all religions, has its own specific moral and ethical rules. For this reason, it seems quite important for Christians to be free to communicate their thoughts and beliefs on issues that have to do with matters of human life and death. Yet, participating in a dialogue and making one's views known regarding important issues that affect the whole of society is not something only Christians should aspire to do. Anyone

who believes that s/he has an opinion which deserves to be heard, and that there is an element of truth in their beliefs and arguments, should be able to demonstrate this truth through discussion and open dialogue and try to convince their adversaries or be convinced by them. This is the basis of democracy as well as open-minded and rational interaction and a practice that ought to be preserved and encouraged in any society.

Philosophical theories and ethical views that refer to a specific religious tradition are normally rejected by secular societies for the reason that they seem to be restrictive to a particular way of thought. However, in the previous chapter I demonstrated that arguing for a holistic anthropology does not have to be done only within the Christian community, nor does it have to rely exclusively on Christian beliefs and doctrines. Contrary to Engelhardt's position, I believe that holism is a theory that could enter the public/secular discussion and offer a valid alternative to the ones that seem to dominate the public forum at the moment. It seems to me that the holistic approach has a number of points that makes it preferable to the others presented in this thesis.

Concluding Remarks

Holistic theory argues for the *intrinsic* moral value of human life not for the *full* moral status of the human embryo. The main point of departure between holistic ethical theory and the one presented by Harris and Warnock is that it regards human life and consequently *all* human beings as morally important. Holistic anthropology maintains that what we are fundamentally is psychosomatic unities. Holistic theory does not draw a distinction between the biological and the ontological beginning of humans. Body and mind begin together as different aspects of human life. Initially they all exist in potential form, but as the human being grows and evolves they become more apparent to the external observer. The human being is a system with composite parts that are in collaboration with each other right from the start. Everything that characterises a human being, bodily faculties, mental or otherwise, are properties, products of the interaction between the system's parts. Being a human person is not a quality of one of the composites, but a product of the interaction and interrelation of what constitutes a human being.

Holism focuses on the nature of the being, like Moore's theory suggests, in order to define and establish intrinsic value. When referring to intrinsic value we are talking about a minimum level of morality that derives from the nature of the being and stays the same throughout the being's life. As the being grows and develops other kinds of value like personal value, relational value, utility value, societal value etc. are added up to increase its moral worth, until at some point s/he reaches full moral status. These values

are subject to many factors like normal healthy development of the being, age, social statues, education, relationships etc. The only value that cannot be decreased or removed is intrinsic value; this is linked not to external factors but to the unalterable nature of the being.

The fact there is detectable collaboration between the parts of even the early human embryos is a clear indicator that we are human beings. That is: we are human organisms right from the zygote stage and what is described as “humanhood” is a system product. Although the various characteristics can be distinguished from one another, when investigating human life as a whole, they cannot be separated and regarded in isolation from the rest of the system. According to this theory then, everything that is valuable about human personhood is present in a dynamic form from the moment of conception until the end of biological life.

One could argue that it is irrational to describe the human embryo as a psychosomatic unity when the only thing that exists in this particular moment of its development is the “somatic” without the “psycho”. This could be a valid criticism if we were to understand the term ‘psychosomatic’ as a descriptive term that outlines the *specific* characteristics and properties that can be seen in the human being at this particular time. However, I understand the term ‘psychosomatic’ as a generic term that describes human nature. Hence, human embryos are ‘psychosomatic unities’ not because they can demonstrate psychological and mental abilities, but in virtue of their human nature. Hence, holistic anthropology is a theory that regards humanhood as a morally valuable trait. This means that it does not discriminate among people by measuring capacities and calculating utility standards in terms of basic intrinsic value. Every human

being, regardless of the state of mental development it has reached, deserves some respect and protection qua human being. Human embryos fall under this category, as well. They are also human beings and psychosomatic unities; body and mind in collaboration.

Holism sits quite close with the animalism theory of De Grazia and Olson in this discussion. Both theories claim that it is not just psychological features and personhood that can answer the question 'What am I fundamentally?'. They both suggest that in order to reveal the intrinsic nature of humans we need to look at this capacity/characteristic that prevails and accompanies us throughout our lives and not at specific psychological/mental capacities that emerge later in life and sometimes disappear way before biological death occurs. However, there are three important differences between these two theories: (i) according to animalism what we are fundamentally is human animals, whereas according to holism what we are fundamentally is psychosomatic unities; (ii) animalism does not make any ethical claims about the value of human beings whereas holism does and; (iii) holism does not accept the individuality argument for the pre-fourteenth day embryo.

The first point denotes the difference found between reductive anthropological theories and holistic ones. Reductionism holds that what we are is mere biological beings that have the ability to give rise to mental properties. (Of course, there is also the strong materialist theory that maintains that only the physical exists and mental properties are nothing more than physical properties of the brain. Animalism though, at least as described by Olson and DeGrazia, does not accept strong materialism; they see no problem in recognising that something which is a biological being can have mental

characteristics). For animalism then, mental and spiritual traits are just emergent properties that depend causally and ontologically on the physical. Holism on the other hand, perceives psychological and spiritual characteristics as intrinsic parts of the human ontology. Although both theories admit that mental and spiritual characteristics take time to appear in the life of a human being, animalism considers them more as a possibility of our kind where holism treats them as fundamental parts of what we call human nature.

Olson chooses to avoid moral judgements regarding the life of human beings. 'Even though I argue that each of us was once an embryo and a fetus, and might one day be a human vegetable, this should not be taken as expressing any view about the moral status of fetuses and vegetables' he says.⁶⁷ The reason why Olson refrains from discussing the moral value of these particular groups of people is that he believes that biology alone cannot lead to ethical evaluations. There is a need for something else to support morality. Biological theories alone cannot tell us anything about the moral status of beings. Biology merely describes a living organism, it does not ethically assess its existence.

Philosophical anthropology, though, is not just biology. It does not look at the human being only as a human organism, but attempts to shed light on other aspects of human life as well. Holism offers a well-rounded and complete account of human life. It argues that human nature is the interrelation of body and mind. It points at the biological characteristics of human beings as well as at their mental qualities and their ability for spiritual life. Holism as an anthropological theory illuminates the features that could add moral worth to human life. Although, all these features that are of moral worth exist in a

⁶⁷ Olson, *The Human Animal*, p. 4

seed-like form in the human embryos, nevertheless the fact that they exist constitutes a valid reason to regard embryonic human life as valuable.

All secular ethicists who reject the potentiality argument do so because they believe that potentiality cannot justify *full* moral value. Yet, the strong, active potentiality that is to be found in early human organisms to develop to mature human persons is important enough and should not be neglected. Harris argues that it is unreasonable to treat someone as *X* when he or she is not *X* yet. Yet, it is also unreasonable to believe that one has *no* moral value whatsoever, because he or she is not *X* yet. A sixth year medical student is not a doctor yet. However she has the active potential to become one if she passes her last exams. Although she does not have the status of a doctor yet, she has *some* value as a medic person in virtue of her active potential to become a doctor soon.⁶⁸ As we said earlier, full moral value is derived from a group of characteristics and qualities that a being has. Intrinsic value on the other hand is something that stems from the being's intrinsic nature. The fact that human embryos belong to a group of beings that have all these morally valuable capacities, and the fact that these capacities exist in an active potential form in the human embryo compels us to recognise a *basic* level of moral worth to embryos, namely intrinsic moral value.

The third point is that of individuality. As we saw above, developmental embryology does not support this claim from individuality. The pre-fourteenth embryo is as much a human organism as the post-fourteenth day embryo. Holistic anthropology, by perceiving life as a continuum and regarding humans as holistic systems, is in accordance with the scientific findings of developmental embryology.

⁶⁸ I owe this example to Prof Julian Savulescu.

Once more I need to point out that holistic theory does not argue for full moral status for the human embryo. Holistic anthropology does not claim the moral equation of early instances of human life to fully fledged persons. The theory demonstrates the intrinsic moral value of human life and aims to justify and establish a system that ensures a minimum, basic level of moral worth for all humanity. It is absurd for anyone to argue that a fourteen day human embryo has the same capacities as a healthy adult human being. What one can safely say, though, is that the human embryo is a human being with the active potential of becoming a healthy adult human being.

Harris disregards the argument from potentiality: we cannot treat one as *Y* if s/he is not *Y* yet. Of course, no one will ever attempt an intellectual conversation with a human embryo as they would with an adult human being. However, this does not mean that by regarding the human embryo as a valuable being, we misjudge its capacities. In our everyday encounters with people, we interact with them to the level they are able to respond. We do not use baby language when we are conversing with a university professor, nor we discuss politics with a five-year old child. This difference does not justify regarding the university professor as having a greater intrinsic moral value than the five year old child.

Also, the fact that there is collaboration between the cells that constitute the human embryo right from the start of its existence puts more weight on the view that the potentiality we are referring to in the case of humans is not a weak one, rather a strong and active one. 'I take potentiality to be something more than mere possibility' argues Gene Outka. 'The "more" refers to an entity actually in motion, a force that is there, a

*power underway.*⁶⁹ It represents the beginning of an individual/personal life, the kind that has the existing capacity to acquire personhood characteristics and full moral status. For that reason it deserves to be respected and protected. Human embryos 'are irreducibly valuable. I take this to mean that, from conception forwards, a presumption holds that they should come to term. Overriding this presumption carries the burden of proof.'⁷⁰

John Harris, Mary Warnock and Tristram Engelhardt understand moral status in absolute terms. All three of them are trying to establish whether it is possible to morally equate human embryos with human persons. Harris, who is using 'personhood' criteria, comes to a negative conclusion. Warnock does not want to accept that being human bears no moral value. She tries to balance her intuition regarding human life with her conviction that human embryonic stem cell research is too important for humanity to be banned and comes up with a theory that is both philosophically and scientifically unbalanced. Engelhardt realises that *absolute* moral value for human embryos is a concept almost impossible to support outside of a Christian edifice. Therefore, he suggests two different ethical outlooks to the moral status of the embryo; one for his Christian friends that affirms its inviolability and one for his moral enemies that rejects it.

Although Engelhardt also accepts holistic anthropology as presented in the Christian tradition and substantiated through the Christian doctrines of Divine Creation and *Imago Dei*, he does so only in a Christian context. He believes that seeing human beings as psychosomatic unities and recognising intrinsic moral value for all instances of human life to be a metaphysical belief rather than a view that can be established

⁶⁹ Outka, G., 'The Ethics of Human Stem Cell Research', in Brent Waters and Ronald Cole-Turner (eds.), *God and the Embryo: Religious Voices on Stem Cells and Cloning*, Washington D. C.: Georgetown University Press, 2003, pp. 29-64 (42).

⁷⁰ Ibid.

rationally. Yet, as I argued in this chapter human embryos might not qualify for ‘full moral value’ but can be awarded with ‘intrinsic moral value’ in virtue of their intrinsic nature.

I also suggested that holism is a theory not only directed to the Christian congregation but an anthropological stance that can be appealing to every body/society in general. It is a theory that succeeds in disclosing the fundamental nature of human beings and revealing the morally significant aspects of human life. As an anthropological theory it focuses on human life, on the being itself, and not on supervenient characteristics and states of existence/affair. We shifted the discussion from ‘persons’ and ‘personhood’ to ‘humans’ and ‘human life/nature’. As stated above intrinsic moral value can only be based on the intrinsic nature of the being.

Although many of the abilities and characteristics of human beings change over time, one thing that remains the same is their fundamental nature, the fact that they are human. All human beings, in virtue of their essential nature and regardless of their age, abilities and social status share the same basic level of moral value: that is intrinsic value. Human embryos are human beings. Therefore, human embryos can be justifiably considered as beings with intrinsic value.

What it is left now is to examine the implications of the intrinsic moral value of the human embryo for biomedical research, and how this theory could inform practical applications and methods in the stem cell research front. This is going to be the focus of the following chapter.

Chapter 7

STEM CELL RESEARCH IN THE LIGHT OF HOLISTIC ANTHROPOLOGY

Introduction

In this chapter I will argue that holistic anthropology, and the ethical theory of intrinsic moral value to which it is connected, require from us to refrain from using human embryos as valueless research material. This means that the unnecessary and deliberate creation and destruction of human embryos for the purpose of conducting research with uncertain results does not agree with the degree of respect their ontological status asks for. By creating embryos for the purpose of dissection, experimentation and eventual destruction when there are other alternative methods available that do not require the

deliberate creation and destruction of human embryonic life, we diminish their humanity; we no longer regard them as beings with an intrinsic moral value and they fall into the category of mere matter; of inanimate beings with no intrinsic value. However, as I will demonstrate in this chapter, not all forms of stem cell research are prohibited under this ethical theory.

Respect for the intrinsic value of human life

Now that we have established a basic level of moral worth for the human embryo, i.e. intrinsic moral value, we must return to the primary question regarding the use of human embryos for biomedical research. According to the theory of intrinsic moral value, the human embryo has a level of moral worth greater than that of a cell, tissue or an inanimate object, but lesser than that of a human person.¹ What does this mean in practical terms for stem cell research applications? If the embryo has intrinsic moral value, is it ethically right to use and destroy human embryos for research purposes? Conversely, is it ethically right to stop research that might help millions of persons now and in the future? What is the best way to overcome these problems? If we agree to a holistic understanding of the person, does this mean that we commit ourselves to a

¹ The intrinsic moral value of the humans, because of their intrinsic nature, is greater to that of animals and therefore the intrinsic moral value of a human embryo is greater than the intrinsic moral value of an animal. The implications of this difference in intrinsic moral value between humans and animals and how this affects animal experimentation is a complicated philosophical and practical problem that falls outside the scope of this thesis.

position that wants embryos to be treated as sacrosanct? Would it be possible to hold this position and at the same time allow human embryonic stem cell research?

Some philosophers believe that it is logically incompatible to argue for the moral worth of human embryos and, at the same time, allow researchers to use them for experiments. 'Respect' means protection of one's life, they state. Daniel Callahan is one of the philosophers who propose that respect for the life of the human embryo should translate into inviolability, and that we do not have any moral obligation to support and fund this type of scientific research. If the scope of research is to improve our welfare, then there are other more pressing, easier-to-meet and more economical ways of achieving this, Callahan argues. At the same time, most people and bioethical committees are ready to accept that we owe some kind of respect to the human embryo. Therefore, Callahan concludes, '[R]espect for embryos in any meaningful sense is, at the least, incompatible with destroying them solely for our medical benefit. They obviously gain nothing but death.'²

Gilbert Meilaender also agrees with Callahan. 'If we forge ahead with embryonic stem cell research, we simply scrap the language of respect or profound respect for those embryos that we create and discard according to our purposes. Such language does not train us to think seriously about the choices we are making, and it is, in any case, not likely to be believed.'³

Many bioethics advisory boards make reference to the moral obligation to show respect to human embryonic life, even though their use in biomedical research should not

² Callahan, D., 'Promises, Promises: Is Embryonic Stem Cell Research Sound Public Policy?', *Commonweal*, vol. 132 (1), 2005, pp. 12-14 (14).

³ Meilaender, G., 'Some Protestant Reflections,' in Suzanne Holland, Karen Lebacqz and Laurie Zoloth (eds.), *The Human Embryonic Stem Cell Debate: Science, Ethics and Public Policy*, Cambridge, Mass.: MIT Press, 2001, pp. 141-147 (146).

be prohibited. For example, the US National Bioethics Advisory Commission (NBAC) maintains that ‘...human embryos deserve respect as a form of human life.’⁴ Also, the Geron Ethics Advisory Board (GEAB) says: ‘The blastocyst must be treated with the respect appropriate to early human embryonic tissue.’⁵ Yet, many believe that such references are made just to appease the consciences of the lawmakers who allow, and the researchers who conduct, such research. If one recognizes the need to respect human embryonic life, then research on embryos should be prohibited under any circumstances and regardless of any benefit that could come out of it.⁶ Respect for human embryonic life and using them for stem cell research are surely, then, two mutually exclusive things.

Ethics cannot be a black-or-white issue. There are many intermediate grey areas. In particular, it seems that questions concerning the moral status of human embryonic life are not a clear-cut case. ‘Because ethics is invoked precisely when there are disagreements or uncertainties about the rightness or wrongness of proposed courses of action, it is more comfortable with shades of gray.’⁷ In Chapter 6 we underlined the distinction between the terms “full moral value” and “intrinsic moral value”. The former is the type of moral worth normally awarded to human persons who can demonstrate all the appropriate qualities that personhood requires. Full moral value means that the person’s life is inviolable and that his or her interests should be respected and protected. However, one should note that even Immanuel Kant’s famous ‘moral imperative’ does

⁴ National Bioethics Advisory Commission, ‘*Ethical Issues in Human Stem Cell Research: Report and Recommendations of the National Bioethics Advisory Commission*’, Rockville, Maryland, September 1999, p. 15, available at, <http://bioethics.georgetown.edu/nbac/pubs.html>.

⁵ Geron Ethics Advisory Board, ‘Research with human embryonic stem cells: Ethical considerations’, *Hastings Center Report*, vol. 29 (2), 1999, pp. 31-36 (31).

⁶ Alvarez-Manninen, B., ‘Respecting Human Embryos within Stem Cell Research’, in Lori Gruen, Laura Grabel and Peter Singer (eds.), *Stem Cell Research: The Ethical Issues*, 2007, pp. 86-104 (88).

⁷ Young, E. W. D., ‘Ethical Issues: A Secular Perspective’, in Suzanne Holland, Karen Lebacqz, Laurie Zoloth (eds.), *The Human Embryonic Stem Cell Debate: Science, Ethics and Public Policy*, Cambridge, Mass.: MIT Press, 2001, pp. 163-174 (164).

not prohibit using others as means to our ends. It prohibits treating others *merely* as means to our ends, without acknowledging their moral value. Furthermore, intrinsic moral value does not translate into inviolability and absolute moral respect. It only establishes a basic level of moral status that lifts embryos in a higher level of moral worth than inanimate objects and non-human animals.

This is not to say that non-human animals and other living beings have no moral status and do not deserve our respect. Many ethicists and philosophers have argued for the moral status of animals, plants, and even whole ecosystems. Peter Singer and Tom Regan argued for animal rights in 1976 and started the animal liberation movement, condemning the use of animals for research and for food.⁸ Acknowledging animal rights and our obligation to respect them, does not necessarily make animals untouchable. Animals as sentient, and, in some cases, intelligent beings ought to be respected and not treated with cruelty. Their rights should be acknowledged as well as their need to express their nature. Even using them as research subjects can be done in a respectful manner. Minimizing pain and reducing fear and stress, and making sure that while animals are alive they are kept in the best possible conditions, are all signs of respect.⁹ ‘Respect or disrespect lies not alone in what acts are done, but in the attitude accompanying those acts.’¹⁰

Plants also deserve our respectful behaviour, as does the whole of nature. Plants cannot feel pain or fear, and neither can land, rivers, lakes or trees. However, ecology and

⁸ Regan, T. and Singer, P., *Animal Rights and Human Obligations*, Englewood Cliffs, NJ: Prentice-Hall, 1976.

⁹ For example see: ‘The Welfare of Animals (slaughter or killing) Regulations 1995’, Statutory Instrument 1995 No. 731, *British Home Office*, available at http://www.opsi.gov.uk/si/si1995/Uksi_19950731_en_1.htm.

¹⁰ Lebacqz, K., ‘On the Elusive Nature of Respect’, in Suzanne Holland, Karen Lebacqz, Laurie Zoloth (eds.), *The Human Embryonic Stem Cell Debate: Science, Ethics and Public Policy*, Cambridge, Mass.: MIT Press, 2001, pp.149-162 (155).

environmental ethics suggest that people should treat the natural environment with care and humility. ‘Two fundamental tenets appear to be at stake in the nuances within ecological ethics. First is an affirmation of the *independent value* of other creatures and of the ecosystem itself. ... Second is understanding the interconnection and mutual interdependence of all creation, including humans. ... The underlying idea is that we all are parts of a whole, and that damage to any part of that whole damages every part of it directly or indirectly.’¹¹ The principal idea behind these examples is respect for life in any form and shape and then, by extension, respect for each living being and organism according to its intrinsic nature. All instances of life deserve to be respected, primarily for what they are and not only for what they can do or what they can offer to us.

The theory of holistic anthropology that I have argued for in the previous chapters offers a justification of why intrinsic value, and not full moral value, is the correct moral status for the human embryos. It is an anthropological theory that does not differentiate between the biological and the ontological beginning of a being. It requires us to accept a level of moral importance for the human embryo and treat it with the appropriate respect. ‘To respect the embryo is to affirm that the value of the embryo or tissue is not dependent on its value for us or its usefulness to us. Respect sees a value in itself beyond usefulness.’¹² The difference between a fully grown human being and a human embryo is not a difference in kind but a difference in degree.

Embryos are human beings, psychosomatic unities that start their lives as complete/whole entities. It is true that their ‘psyche’ does not seem to be operative to the external observer. Embryos’ capacities do not seem to be advanced to a level that allows

¹¹ Lebacqz, ‘On the Elusive Nature of Respect’, p157.

¹² Lebacqz, ‘On the Elusive Nature of Respect’, p. 159.

them to consciously process experiences. Yet, as I explained before, human embryos are considered as psychosomatic unities in virtue of their fundamental nature; in virtue of the fact that they are human and not because of the specific abilities and capacities they currently possess. Holism requires us to recognize and accept the potential in the human embryo to reach maturity and a level where its mental, psychological and spiritual capacities are apparent to the external observer. The term “respect” comes from the Latin *respicere*, which means “to look back at”, “to regard”, “to consider”¹³. ‘To have respect is to take a second look, seeing below the surface to find the hidden value.’¹⁴

However, respect for human life also means that we have a moral obligation to alleviate pain and suffering, when possible, and to increase the welfare of human persons. Julian Savulescu, Katrien Devolder and John Harris among others are strong advocates of this view. Julian Savulescu and Katrien Devolder argue for our moral imperative to conduct embryonic stem cell research and cloning research.¹⁵ Stem cell and cloning therapy could potentially save the lives of millions of people. For this reason and according to James Rachel’s theory that we are ‘morally responsible and blameworthy for the foreseeable consequences of our omissions’, we are morally responsible for the deaths of the future people who could be saved if stem cell therapies would have been available. ‘Cloning research could result in treatment for common diseases such as heart disease, stroke and cancer. It has a considerable potential to save hundreds of thousands, if not millions of lives. Through a failure of moral imagination we may continue to hold-

¹³ Oxford English Dictionary, 2008 Edition.

¹⁴ Lebacqz, ‘On the Elusive Nature of Respect’, p. 153.

¹⁵ Devolder, K. and Savulescu, J., ‘The moral imperative to conduct embryonic stem cell and cloning research’, *Cambridge Quarterly of Healthcare Ethics*, vol. 15, 2006, pp. 7-21. Also see Seller, M. J. and Phillip, E., ‘Reasons for Wishing to Perform Research on Human Embryos’, in G. R. Dunstan and Mary J. Seller, *The Status of the Human Embryo: Perspective from Moral Tradition*, London: King Edward’s Hospital Fund for London, c1988, pp. 22-32.

back cloning research and be responsible for the deaths of many people who perished while we delayed the development of treatments.’¹⁶ John Harris concludes in his article ‘Scientific research as a moral duty’: ‘The argument concerning obligation to participate in research should be compelling for anyone who believes there is a moral obligation to help others, and/or a moral obligation to be just and do one’s share. Little can be said to those whose morality is so impoverished that they do not accept either of these two obligations.’¹⁷

The possibility for new therapeutic methods for fatal and degenerative diseases, furthering our knowledge regarding human development, and the prospect of making drug and toxins testing more efficient and safer for human and non-human subjects, all constitute very good reasons why stem cell research should continue. As we saw in Chapter 2, some stem cell therapies - mainly therapies using adult or foetal stem cells - are already in the clinical trial stage and yielding encouraging results. Some other applications such as tailored-made human tissue for disease-specific studies and drug testing as well as tailor-made transplantation of cells and tissue requires the use of human embryonic stem cells. As Savulescu and Devolder note ‘we cannot predict in advance the results of scientific research. ... The race has to be run.’¹⁸ The duty to do everything possible to alleviate pain and suffering through the promotion of new therapeutic methods that will significantly contribute to the wellbeing of existing human beings is an ethical obligation that cannot be overlooked.

¹⁶ Devolder, and Savulescu, ‘The moral imperative to conduct embryonic stem cell and cloning research’, p. 12.

¹⁷ Harris, J., ‘Scientific Research is a Moral Duty’, *Journal of Medical Ethics*, vol. 31, 2005, pp. 242-248 (247).

¹⁸ Devolder and Savulescu, ‘The moral imperative to conduct embryonic stem cell and cloning research’, p. 19.

Respectful Killing of Human Beings

Does it have to be that one should either accept research on embryos, denying them any moral worth, or that one should commit to respect the human life and denounce any type of research that uses human embryos? I would like to argue that respect for human life and human embryonic stem cell research do not have to be totally incompatible. Death, or even killing, in some circumstances can accord with the basic belief in the moral importance of human life. One could think of many cases in our everyday lives where human death and respect of human life go hand in hand.

Killing of fetuses has been a generally accepted method to improve the lives of others, for example, notes Julian Savulescu.¹⁹ Doctors routinely perform multifoetal reduction in cases of multiple births in order to increase the chances of the remaining foetus or fetuses to survive and/or enjoy a life without disabilities. Also, cranial decompression is still used in the now rare cases when the foetus cannot be extracted through the birth canal during labour putting the life of the mother in great risk. Again, in cases of severe pre-eclampsia (pregnancy-induced hypertension) doctors will deliver the foetus even if it is very premature and has very little chance of surviving.²⁰

Killing of infants has also been rendered as ethically unproblematic when the killing could benefit and save the lives of others. In 2000 courts in the United Kingdom sanctioned the killing of an infant in order to save the life of another in the case of

¹⁹ Savulescu, J., 'The Embryonic Stem Cell Lottery and the Cannibalization of Human Beings', *Bioethics*, vol. 16 (6), 2002, pp. 508-529.

²⁰ Savulescu, 'The Embryonic Stem Cell Lottery and the Cannibalization of Human Beings', pp. 515-6.

conjoined twins. Mary and Jodie were born joined in the abdomen on the 8th of August 2000. A separation could be performed but would have resulted in the death of Mary. The parents of the twins refused to consent to the separation. Nevertheless, two English courts ruled that it was lawful to proceed with the separation, even in the absence of parental consent. 'Lord Justice Ward stated that the operation was justified in Jodie's best interests because Mary was 'killing' Jodie. That grounded a defence in necessity. ... It is highly questionable whether Mary was 'doing anything' to Jodie.'²¹

Bertha Alvarez Manninen in her article 'Respecting Human Embryos within Stem Cell Research'²² mentions a case of infant killing out of respect for human life and for the benefit of others. It is the case of killing anencephalic children for organ harvesting. Anencephalic children are born without the parts of the brain required for sentience and consciousness. Their lifespan is very short and normally they die within few days or weeks after birth. Some parents of anencephalic children decide to donate the organs of their child in order for the life of another infant to be saved. As with people in persistent vegetative state (PVS), these children are not biologically dead. Organ harvesting for transplantation needs to be done when the heart is still beating or very soon after death, before organs are irreversibly damaged by oxygen starvation. In 1987 Karen Schouten gave birth to an anencephalic baby girl. She and her husband decided to donate the baby's heart. and therefore prematurely kill her, to a baby boy that was born with heart disease. Mrs Schouten said about the procedure: "It was done beautifully and with respect for my husband and I, for our baby, for her life."²³ In 1992 another couple asked

²¹ Savulescu, 'The Embryonic Stem Cell Lottery and the Cannibalization of Human Beings', p. 517.

²² Alvarez-Manninen, B., 'Respecting Human Embryos within Stem Cell Research', in Lori Gruen, Laura Grabel and Peter Singer (eds.) *Stem Cell Research: The Ethical Issues*, pp. 86-104.

²³ Quoted in Alvarez-Manninen, B. 'Respecting Human Embryos within Stem Cell Research2, p. 96.

for permission to donate the organs of their anencephalic baby girl, Theresa. 'The reason Theresa's parents wanted to donate their daughter's organs was precisely to derive some meaning from their personal tragedy, to seek a method through which their child's short life could benefit the world by facilitating the continued existence of others.'²⁴ However, in this case their request was rejected by the Broward County Circuit Court in Florida and their baby daughter died nine days after her birth.

Furthermore, there are situations where even the death (or killing) of adult human persons can be justified as a necessary sacrifice for the common good. Countries sometimes find themselves in the unfortunate situation where they need to defend themselves from invaders. In such cases and when all diplomatic avenues have been exhausted, the government of the country sends its troops to fight, defend and die for their country. The government knows that many of the young soldiers will be killed; in some cases where the opponent is clearly much more powerful, the government decides it is better to fight an unwinnable war and sacrifice all these young men than to surrender. For example during the Second World War Greece decided to defend its territory and fight a war against Germany, regardless of the fact that Greece stood no chance of winning. As expected, Greece lost the war and remained under German occupation from 1941 until 1944. During this time, thousands of men and women died trying to defend their country.

Examples like this are numerous in the world history. The key question is this: When a country decides to fight a lost war and send young men and women to certain death, does this mean that they believe that the lives of the soldiers have no moral worth and therefore are disposable? Clearly not! Armies are composed of young, strong and

²⁴Alvarez-Manninen, 'Respecting Human Embryos within Stem Cell Research', p. 96.

healthy men and women. Condemning them to certain death by sending them to fight an unwinnable war, surely is not the first option any government ever considers. It is only after all the other avenues have been exhausted that a country will have to take such a difficult decision. This decision, however, does not signify disrespect for human life but quite the opposite; these people will fight for the freedom and the welfare of their fellow citizens, and sacrifice their lives in order for future generations to live in a free country. Their death can be seen as the greatest proof of the value of human life.

One can draw a few parallels between a war situation and the use of human embryos for embryonic stem cell research. Scientists also fight a war against disease, illness and death. Their aim is to alleviate pain and suffering in humans and gain invaluable knowledge regarding human development that could help them maximize the well-being and the welfare of future generations. Embryonic stem cells seem to be their best weapon against these enemies. However, human embryos are not valueless beings that can be disposed without a second thought. Their intrinsic moral value requires researchers to treat them with respect. This means that they should not be light-heartedly 'sacrificed' for the common good. Destroying them for stem cell research should not be the first option considered. As in a war situation, governments do not decide to send their troops to fight unless they have used and exhausted every other possible way to reach the desired outcome. Likewise, if one recognizes intrinsic moral value to human life, creating and destroying human embryos for biomedical research should not be the first option chosen. Scientists should first utilize and exhaust all the other alternatives possible, and only when it is proven that the making of embryos for research is absolutely necessary and unavoidable to consider this last option.

Of course, one could object to this analogy by saying that adult human persons are in a position to agree or deny to participate in a war and that the soldiers that are sent to fight and possibly die have often freely decided to do so by giving their consent. This is a valid and expected criticism. Embryos are in no position whatsoever to agree or object to their participation in biomedical research. From this point of view their status is similar to that of non-human animals or even worse, to that of objects that cannot express any signs of approval or disapproval for the way they are treated.

It is true that adult human beings that are capable of serving in military forces are also capable of deciding for their own lives. Yet, in some countries, for example Israel and Greece, military service is conscriptive. People who object to it are faced with severe sentences often comprising years of community service or imprisonment. Also, when a country is under attack all citizens are considered obliged to join the army. Refusing to join the army is considered as treachery and the penalty can be as severe as death. Therefore, it is not exactly a case of *absolute* free consent whether one will join the army and risk his or her life defending his or her country or not.

Armed forces, manned either by conscripts or volunteers, are a tool at the government's disposal to be used when judged necessary. Those who serve in the army, and the rest of society, trust the government not to sacrifice the soldiers' lives unless it is absolutely necessary. Notwithstanding that losing young people on battlefields and destroying embryos in a scientific laboratory cannot carry the same weight - in the former case we are talking about the loss of persons and in the second about the loss of premature human life - I believe that the analogy can be made.

Savulescu also offers a hypothetical scenario, a variant of John Harris' 'Survival Lottery', to demonstrate that respect for human life could lead to scarce but routinely killing of adult healthy human persons for the benefit of others.

'My daughters kissed their dead grandfather on the forehead. He was only 58. The two Lifesavers were waiting respectfully at the front door. They would take him to remove his organs.

No one objected to the obligatory organ donation scheme. Everyone stood to gain. The death of one person could provide organs to save 10 peoples' lives. Life expectancy has been increased by 20 years. My two girls owe their lives to kidneys from a donor. ... I couldn't tell whether he died from a natural arrhythmia of the heart or whether he was 'chosen'. When the natural organ supply was inadequate to meet demands, the Lifesavers chose a person randomly by computer program. While the person slept, a precisely positioned electromagnetic beam came down from a satellite system in outer space and stopped the person's heart.

Few people were ever killed. And we never knew who was killed and who died naturally. Everyone accepted the new system because everyone had a greater chance of living much longer. Organ transplants were used for all diseases, for all ages.

My daughters waved good-bye as he was wheeled out on a trolley. The death certificate would say 'Died in his sleep'.

I hoped someone young with children would get one of his organs. He had been in good shape until he died. He had done a lot of exercise. Everyone knows exercise can kill you.'²⁵

²⁵ Savulescu, 'The Embryonic Stem Cell Lottery and the Cannibalization of Human Beings', pp. 508-9.

The killing of an innocent person, argues Savulescu, can be morally justified and permitted ‘for the purpose of reducing the risk of death in a population or class, of which that person is a member’²⁶, and when killing ‘significantly improves the chances of the survivors of avoiding premature death or serious disability.’²⁷ Human embryonic stem cell research satisfies both criteria, he notes. ‘ES [embryonic stem] cell technology stands to benefit everyone: embryos, children and adults. It is this property that may make it reasonable to kill some embryos to conduct ES cell research even if the embryo is a person.’²⁸ He concludes that it is more rational to prefer to live in a society that secures a high level of health and welfare for its members even if this means that sometimes innocent people need to be sacrificed for the general good than in a society that demonstrates its respect of human life by allowing ‘people to wither in nursing homes, unable to swallow, speak or move’²⁹

Creation of human embryos for stem cell research

Respect for human life, and consequently for the human embryo, is something that researchers should always take into account when considering using human embryos in their experiments. As already mentioned, this is included as a guideline in many advisory

²⁶ Savulescu, ‘The Embryonic Stem Cell Lottery and the Cannibalization of Human Beings’, p. 520.

²⁷ Savulescu, ‘The Embryonic Stem Cell Lottery and the Cannibalization of Human Beings’, p. 528.

²⁸ Savulescu, ‘The Embryonic Stem Cell Lottery and the Cannibalization of Human Beings’, p. 529.

²⁹ Ibid.

boards' announcements. Also, we argued that respectful treatment and killing are notions that are not always incompatible. Now, I will attempt to offer a more specific account of what respectful treatment and recognition of the human embryo's intrinsic moral value means in practical terms for biomedical research.

In simple terms, treating an embryo with respect means that the embryo should never be treated disdainfully. Scientists should never approach human embryos as valueless and disposable material. Although embryos can be used for research, scientists should make sure that harm and/or destruction of human embryos is minimized when possible. Embryos should not be created deliberately just to be destroyed with no good reason and when there are other equally good alternatives. Also, if research can be conducted without harming or destroying an embryo, then this practice should be preferred. 'Researchers show respect toward autonomous persons by engaging in careful practices of informed consent. They show respect toward sentient beings by limiting pain and fear. They can show respect toward early embryonic tissue by engaging in careful practices of research ethics that involve weighting the necessity of using this tissue, limiting the way it is to be handled and even spoken about, and honouring its potential to become a human person by choosing life over death where possible.'³⁰

The questions now are whether there are valid alternatives to that of creating and destroying human embryos for stem cell research and whether scientists have considered all the possible alternatives before they start asking for permission to create new embryos for their experiments. Biotechnologists can create embryos for research either with *in vitro* fertilization (IVF) using human gametes, or through somatic cell nuclear transfer technique (SCNT) using a human oocyte and a human adult cell. In both cases the end

³⁰ Lebacqz, 'On the Elusive Nature of Respect', p. 160.

product is a human embryo with intrinsic moral value that would have the potential to become a fully grown adult human person, if it was implanted into a womb.

When Dolly the sheep was created through the SCNT technique almost ten years ago and the prospect of human cloning became more probable, many hastened to disregard the “potential” human clones as not really “human”. The “unnaturalness” of the process of their creation, the fact that their creation didn’t entail the fusion of a human male and female gamete, made some believe that clones might be lesser humans, subhuman or even soulless beings with questionable moral and legal rights. There was also the fear that cloned humans would be used as a source of spare organs; images of a “Brave New World” with biobanks where whole human beings would be kept in big fridges waiting to be used as spare organ kits made their appearance in the media. Scientists were very quick to scatter people’s fears about this type of scenarios. When the initial shock was gone, religious thinkers, ethicists and philosophers agreed that the moral status of a human clone will be no different to that of any other human being.³¹

Reproductive cloning was rendered unethical and illegal in most counties around the globe, but SCNT technique got the *green light* in countries such as the United Kingdom, the USA and Australia. SCNT cloning method does not lead to the creation of an entire human person. The embryo is never implanted into a human womb. It is allowed to grow until it reaches the blastocyst stage *in vitro*. When the desirable pluripotent stem cells are formed, scientists harvest these cells and destroy the embryo.

³¹ See for example: Hollowell, K., ‘Will human clones have souls?’, *WorldNetDaily.com*, 07/02/04, viewed on 28/02/04, http://www.worldnetdaily.com/news/article.asp?ARTICLE_ID=36983; Damon, D., ‘Do clones have souls?’ *BBC News*, viewed on 06/05/2001, <http://news.bbc.co.uk/1/hi/programmes/bh/1315575.stm>; Pence, G. E., *Who’s afraid of Human Cloning*, Oxford: Rowman and Littlefield, 1998; Eisenberg, L., ‘Would Cloned Humans Really Be Like Sheep?’, in Arlene Judith Klotzko (ed.), *The Cloning Sourcebook*, Oxford: Oxford University Press, 2001, pp. 70-79; Macintosh, K., L., *Illegal Beings: Human Clones and the Law*, Cambridge: Cambridge University Press, 2005.

The benefit of using the cloning technique in biomedical research is that scientists are able to create stem cells that are genetically matched to the somatic cell donor. Therefore in the case of cell or tissue transplantation the transplant will be perfectly compatible with the recipient thus avoiding immune system rejection. SCNT technique would also allow researchers to create cellular models of human diseases. Studies and experiments regarding the development of the disease and the effectiveness of new drugs could be conducted on these models. The number of experiments on animals could decrease and clinical trials on human subjects would be much safer.

Scientists also advocate the benefits of using fresh human embryonic stem cells for research instead of any other type of stem cell, and they ask for permission to create new embryos *in vitro* for research purposes. The main argument for using human embryonic stem cells is that they are much easier to manipulate and differentiate in the laboratory. Additionally, biotechnologists will be able to control the conditions of their creation at every stage and therefore the risks for mutations will be minimized. Therefore, human embryonic stem cells will be safer for any therapeutic use.

There are many advantages in creating human embryos for research. However, there are some difficulties and problems that should be overcome first. Apart from the shortage of available oocytes either for cloning or for IVF there are many technical problems that scientists need to solve before they are able to successfully create new embryos for research through cloning. However, the major problem is the ethical question of creating and destroying human embryos for research. As I argued above, the destruction of an embryo does not necessarily mean disrespect for its moral status. We also argued that the cavalier use of embryos is disrespectful of their intrinsic moral worth.

It would be insulting towards human life and sign of dismissal of the notion of human dignity if we were to start creating human embryos, using either technique, when there are other sources available that do not entail the destruction of human life.

In Chapter 2, I presented all the possible ways scientists could use to acquire the stem cells they need for research purposes and all the alternative sources of pluripotent stem cells that do not entail the deliberate creation of new embryos. Stem cell research can proceed with the use of adult, foetal, iPS cells and embryonic germ cells that do not challenge the moral value of the human embryo. This type of research, though, would only cover one aspect of stem cell research. Scientists involved in stem cell research, in their majority insist on the view that in order for research on stem cells to be complete and comprehensive they need to experiment on and study on human embryonic stem cells too.³² It seems that currently there are ways scientists can obtain pluripotent stem cells for experimentation without necessarily creating new human embryos just for destruction and subsequent stem cell harvest.

³² Boyle, A., 'Stem Cell Pioneer does a Reality Check: James Thomson reflects on Science and Morality', *MSNBC*, 25/06/05, viewed on 31/07/07, <http://www.msnbc.msn.com/id/8303756/>.

IVF and PGD as Alternative Sources of Human Embryonic Stem Cells

Scientists could acquire human embryonic stem cells from surplus *in vitro* fertilization (IVF) embryos that are left in IVF clinics to be destroyed. People could be encouraged to donate their embryos for research, instead of destroying them. It is common practice in most countries to create more embryos than could be implanted in one treatment cycle. Normally women go through a superovulation procedure in order to increase the number of eggs produced per cycle from one or two to around eight or nine. The eggs are extracted and fertilized *in vitro*. Only one or two of the nine embryos are implanted. The rest are kept in cryopreservation either to be used in the future, in case the first cycle of treatment fails, or until the parents decide what they want to do with their spare embryos.

The maximum time that embryos are kept for in the UK is five years. The storage period can be extended over the five year limit only under exceptional circumstances and with the written permission of both parents. This practice results in thousands of embryos left in IVF banks until it is time to destroy them. From the 2,137,924 embryos created in British clinics between 1991 and 2005, about 1,2 million were never used.³³ Most of the spare embryos were discarded, either because the parents forget about them and the time for the preservation lapsed, or because they actively decided to destroy them. The alternative choice couples have is to donate their embryos to other infertile couples, or to

³³ Clout, Laura, 'Concern over destroyed embryos by IVF clinics', *Telegraph*, 31/12/2007 viewed on 4/07/2008, <http://www.telegraph.co.uk/news/uknews/1574119/Concern-over-destroyed-embryos-by-IVF-clinics.html>.

donate them for research. Interestingly, couples that undergo IVF treatment are much more willing to donate their supernumerary embryos for research purposes rather than for adoption. However, only a very small proportion of the couples who initially expressed intention to donate their surplus embryos for research go ahead with their initial decision.³⁴

There are many who believe that the creation of surplus IVF embryos and, in extension, the donation of unwanted embryos for research is utterly unethical and goes against the moral imperative to protect human life and never to use it as means to one's own ends.³⁵ Some consider human embryos as vulnerable members of our society. By allowing researchers to use them in experiments we encourage a policy that permits the sacrifice of the weak for the benefit of others. It could potentially put the life of other vulnerable members of our society in danger, for example people with disabilities or the aged³⁶, or even lead to dehumanizing practices such as embryo farms, the use of embryos and foetuses for spare parts and the general commodification of human life.³⁷

³⁴ Bjuresten K. and Hovatta O., 'Donation of embryos for stem cell research – how many couples consent?', *Human Reproduction*, vol. 18 (6), 2003, pp. 1353-1355; Hoffman D. I. et al, 'Cryopreserved Embryos in the United States and Their Availability for Research,' *Fertility and Sterility*, vol. 79 (5), 2003, pp. 1063-1069; Bangsbo S., et al., 'Patient's attitudes towards donation of surplus cryopreserved embryos for treatment or research', *Human Reproduction*, vol. 19 (10), 2004, pp. 2415-2419; Belluck, P., 'It's not so easy to adopt an embryo', *New York Times Online*, 12/06/05, viewed on 10/10/07, <http://www.nytimes.com/2005/06/12/weekinreview/12belluck.html>; Christopher, L., 'Surplus to requirements', *Health and Fitness*, 28/09/06, viewed on 10/10/07, <http://www.smh.com.au/news/pregnancy--ivf/surplus-to-requirements/2006/09/28/1159337255733.html>; Hug, K., 'Motivation to donate or not donate surplus embryos for stem-cell research: literature review' *Fertility and Sterility*, vol. 89 (2), 2008 pp. 263-277.

³⁵ Campbell, A. V., 'Ethical Issues in therapeutic cloning'. Round table. *Ethical Aspects of human stem cells research and uses*, Brussels, 26 June 2000, viewed on 2/05/2008, http://europa.eu.int/comm/european_group_ethics/docs/dp15rev.pdf.

³⁶ Rickard, M., 'Current issues brief No. 5, 2002-03: Key ethical issues in embryonic stem cell research', *Department of the Parliamentary Library*, Australia, 2002, viewed on 2/05/2008 <http://www.aph.gov.au/library/pubs/CIB/2002-03/03cib05/pdf>; Nippert, I., 'The pros and cons of human therapeutic cloning in the public debate', *Journal of Biotechnology*, vol. 98, 2002, pp. 53-60.

³⁷ Sandel, M. J., 'Embryo ethics – the moral logic of stem cell research', *New English Journal of Medicine*, vol. 351, 2004, pp. 207-9.

Richard Doerflinger, Daniel Callahan and Gilbert Meilaender are among those who maintain that respectful treatment of human life means that human embryos should never be used for research under any circumstances. They hold the position that the moral status of the human embryo requires that they should never be destroyed ‘solely for our medical benefit.’³⁸ Richard Doerflinger notes that ‘[t]hese stem cells are taken from embryos while they are still living. In effect, the harvesting of cells is itself the abortion – i.e., it is the act that directly destroys a live embryo.’³⁹ Even the fact that all of these embryos will inevitably be destroyed does not sway their view. ‘But to use for the benefit of others those whom we have already (even if legitimately) condemned to die is so clearly an example of the strong using the weak that I think we should draw back and say no.’^{40 41}

There are two main objections to the position of Doerflinger, Callahan and Meilaender. Human embryos have intrinsic moral value but no full moral status. Their lives deserve to be respected and protected, but this does not extend to considering their lives inviolable. Respectful treatment of embryos means that they should not be used in a cavalier manner, but their value can be weighted against other values and be overridden if judged absolutely necessary.

³⁸ Callahan, ‘Promises, Promises: Is Embryonic Stem Cell Research Sound Public Policy?’, p. 14.

³⁹ Doerflinger, R. M., ‘The Ethics of Funding Stem Cell Research: A Catholic Viewpoint’, *Kennedy Institute of Ethics Journal*, vol. 9 (2), 1999, pp. 137-150 (140).

⁴⁰ Meilaender, G., ‘Some Protestant Reflections’ in Suzanne Holland, Karen Lebacqz and Laurie Zoloth (eds.) *The Human Embryonic Stem Cell Debate: Science, Ethics and Public Policy*, Cambridge, Mass.: MIT Press, 2001, pp. 141-147 (145).

⁴¹ It is important to note that there are groups like the Snowflakes Embryo Adoption Program who believe that discarding surplus IVF embryos is immoral. Therefore they try to adopt as many embryos as they can and give birth to them. Also, there are campaigners that advocate the reduction of the number of embryos fertilized to only one or two, the number that it is safely to be implanted per cycle. However, the majority of governments around the world, people and clinics accept the killing of embryos as a *de facto* practice of IVF treatment.

Furthermore, I argued earlier in this chapter that respect of human life and killing are not always mutually exclusive. Examples were given that demonstrated that there are cases that even the killing of innocent human persons can be morally justifiable and ethically tolerable when there is no alternative option and the benefit of such action is far greater than the harm done. In this case, using the spare embryos that will inevitably be discarded for biomedical research that could potentially save thousands of human lives, seems more in tandem with the notion of respect for human life, than not. Gene Outka calls this view the 'nothing is lost' principle. 'I first learned of this principle from Paul Ramsey. ... One *may* directly kill when (1) the innocent will die in any case and (2) other innocent life will be saved.'⁴² Alvarez Manninen also agrees with this position: 'given the inevitable death of these embryos, using them to benefit others is far more respectful than the way in which they currently meet their demise in fertility clinics across the country. That is, it is far more respectful not to waste their potential, a waste that renders their existence pointless, and instead use them to help enhance the health and lives of their fellow human beings.'⁴³

Alvarez-Manninen employs John Harris' 'Principle of Waste Avoidance' to support her argument. According to this principle 'it is right to benefit people if we can, wrong to harm them and that faced with the opportunity to use resources for a beneficial purpose when the alternative is that those resources are wasted, we have powerful moral reasons to avoid waste and do good instead....It must, logically, be better to do something good than to do nothing good; it must be better to make good use of something

⁴² Outka, G., 'The Ethics of Human Stem Cell Research', in B. Waters and R. Cole-Turner (eds.) *God and the Embryo: Religious Voices on Stem Cells and Cloning*, Washington D.C.: Georgetown University Press, 2003. pp. 29-64 (46).

⁴³ Alvarez-Manninen, B., 'Respecting Human Embryos within Stem Cell Research', p. 89.

than to allow it to be wasted.’⁴⁴ Hence, as claimed by Harris and agreed-with by Alvarez-Manninen, we are morally obliged to use these embryos for research, instead of discarding them. At least this way the life of all these surplus embryos ‘will have some meaning in this regard, for they operate as a symbol of human life or constitute an arena for expressing one’s commitment to human life.’⁴⁵

Allowing these embryos to be wasted could be seen as a confirmation of their lack of moral status. On the other hand, couples could be encouraged to donate their unwanted embryos to research and by that also contribute to the promotion of human welfare and health for the wider society. ‘When death is inevitable (as it is for thousands of surplus IVF embryos), using that death to serve a greater good not only benefits society, it also respects the being that dies by allowing its life to have an impact in the world rather than simply be wasted.’⁴⁶

Gene Outka recognizes intrinsic moral status to the human embryo in virtue of its potentiality. Yet, he argues that using spare IVF embryos that would otherwise be discarded or left frozen in perpetuity, is an action that does not contradict their moral value. ‘How much remains of the injunction to treat persons as ends in themselves when one allows research on frozen and eventually-to-be-discarded embryos? I reply that the normative force of the injunction diminishes significantly when one takes to heart *their* (the embryos’) prospects’. Some seek to witness to the dignity of embryos by refusing to do anything to them than to freeze them. ... It is difficult to specify what interest one *protects and promotes*, for example, when freezing and discarding are all that one can

⁴⁴ Harris, J., *On Cloning*, London, New York: Routledge, 2004, p. 142.

⁴⁵ Robertson, J., ‘Ethics and Policy in Embryonic Stem Cell Research’, in M. Ruse and Ch. Pynes (eds.), *The Stem Cell Controversy: Debating the Issues*, Amhest, N.Y: Prometheus Books, 2003, pp. 121-158 (131).

⁴⁶ Alvarez-Manninen, B., ‘Respecting Human Embryos within Stem Cell Research’, p. 100.

seriously envisage. To honour potentiality, where there is no hope of implantation, is to honour *perpetual potentiality*.⁴⁷

The idea of donation is not new in the area of medicine. People many times find themselves unfortunately losing a loved one. Sometime parents see their own children die. Yet, in many circumstances they can save the lives of those who are in desperate need for transplant by donating their childrens' organs. Through death, life emerges, and through bereavement and sorrow, happiness and hope. This is the ultimate praxis of neighbour-love and altruism; two of the most important virtues celebrated in Christian ethics. Nowadays almost all Christian Churches concur and support organ donation.⁴⁸ Of course, organs do not have the same moral status as living human embryos.

The law orders that organs are only to be extracted from the body of the patient when he or she is certified clinically dead and there is absolutely no chance of recovery. Surplus embryos are not dead and could have grown to be healthy mature human beings with a potentially long and flourishing life if they were implanted into a womb. Yet, the decision parents take not to use these embryos or donate them to other infertile couples, means that the only future they have is death. For this reason the first choice couples should be given is to donate their spare embryos to other infertile couples.⁴⁹

⁴⁷ Outka, 'The Ethics of Human Stem Cell Research', pp. 49-50.

⁴⁸ We should note that for some time organ donation was thought to be similar to body mutilation and therefore an act of disrespect for God's Creation. Also, it interfered with the doctrine of bodily Resurrection. Therefore, many Christian Churches for some time were objecting to organ donation. Nowadays, though, these concerns have been eliminated and most Churches and their leaders perceive organ donation as an action totally in tandem with the Christian teaching so long as the body is treated respectfully throughout the process.

⁴⁹ It seems that couples are very reluctant to donate their surplus embryos to other infertile couples; instead they decide to destroy them. See Belluck, 'It's Not So Easy to Adopt an Embryo'; and Christopher, 'Surplus to Requirements: Creating life with medical help can mean agonising decisions later'.

Only after they have ruled-out the option of donation for implantation should they be presented with the option of donating them for research. At least this way it is ensured that all possibilities for these embryos to be born are exhausted and the only other alternative would be to destroy them. However, one could draw a parallel between the altruistic act of donating ones' organs and donating ones' surplus and unneeded embryos. Donation does not diminish the value of the donated body or embryo. When parents donate the organs of their children they do not think that their children (even when very close to death) are valueless. Furthermore, as we saw earlier, when parents decide to kill their anencephalic children who will not survive more than a couple of days in order to save the lives of other children and offer them the chance to live long healthy lives, they highlight the value of human life rather than the opposite. Donation is an acknowledgment of the value of human life, an act of altruism and a sign of empathy.

Although these embryos will not be used directly to save peoples' lives, but indirectly, they help the advance of medical science and hopefully of the manufacturing of new therapies. There may be other alternative sources of stem cells, such as adult stem cells and iPS cells, but almost all scientists involved in stem cell research keep repeating the need for research and experimentation on human embryonic stem cells. Professor Kohler coordinator of the Centre for Regenerative Biology and Medicine in Tuebingen Germany, says of the need for embryonic stem cell research: 'If people believe there is no point to using embryonic stem cells for research because we could do just as well with adult ones, then they have not understood that information about the regenerative ability of adult cells absolutely depends on the understanding of embryonic developmental

processes.’⁵⁰ Thomson, the scientist who was first to isolate stem cells from a human embryo also subscribes to this position: ‘If we study the embryonic stem cells, we learn the basic science. That knowledge is just as likely to be applied to adult stem cells as to embryonic stem cells.’⁵¹ As Devolder and Savulescu note, ‘[b]oth cell types are different; they both have their advantages and disadvantages and will be useful for particular purposes. In some cases, combined embryonic stem cell and adult stem cell therapy might be the best option. Therefore, further research is required on both cell types.’⁵²

Donating surplus IVF embryos to biomedical research seems to be a morally acceptable way for the research to continue without neglecting or diminishing their intrinsic moral value. It is worth noting that the position that is trying to balance respectful treatment of human embryos with the moral obligation to continue scientific research is also supported by thinkers who do not see anything inherently bad with creating and destroying embryos for research. Katrien Devolder who maintains that creating and sacrificing embryos for research is morally correct and should not be prohibited, states:

‘I think that a view on ESCR [embryonic stem cell research] that also accepts the creation of research embryos for stem cell derivation is compatible with the actual beliefs of those who now defend DCD [discarded-created distinction]. Defenders of DCD believe that an embryo merits special respect because of its intrinsic value, but that its potential to become a person can be weighed up against other values.

⁵⁰ *The Importance of Embryonic Stem Cell Research*, BIOPRO The Biotech/Life Sciences Portal Baden-Wuerttemberg GmbH, 30/07/07, viewed on 10/07/08, <http://www.bio-pro.de/en/region/stern/magazin/03861/index.html>.

⁵¹ Boyle, ‘Stem Cell Pioneer does a Reality Check: James Thomson reflects on Science and Morality’.

⁵² Devolder and Savulescu, ‘The moral imperative to conduct embryonic stem cell and cloning research’, p. 14.

There are forms of respect and deference which are less absolute and which can have gradations. The respect one has for an entity does not exclude it, provided that a meaningful argument is presented, from being used as a resource for a goal which is believed to be important. (Research on cadavers, with the informed consent of the party in question and on the condition of respectful treatment, is entirely legitimate in most countries.) Early embryos are respected by ensuring that they are used with care in research that incorporates substantive values such as the alleviation of human suffering (in accordance with the principles of beneficence and proportionality), by guaranteeing that their potential will not be wasted (in accordance with the principle of waste avoidance) and that they will only be used *if there are not less contentious means of achieving the interested goal* [emphasis added] (in accordance with the subsidiary principle). Well regulated stem cell research that uses embryos solely created for these purposes can be consistent with these widely shared values.⁵³

There is one more parameter that needs to be considered before one can safely conclude that at the present time, creation of research embryos could be superfluous and unnecessary. This is the technical suitability of spare IVF embryos for biomedical research. IVF clinics always choose to transfer the best-quality embryos produced in order to increase the possibilities of live birth. Consequently, the embryos normally left for donation are not always of the highest quality. Also, some of the surplus embryos that could be donated today were created many years ago, when laboratory cultures were not

⁵³ Devolder, K., 'Creating and Sacrificing Embryos for Stem Cells', *Journal of Medical Ethics*, vol. 31, 2005, pp. 366-370 (369).

as advanced as they are nowadays.⁵⁴ This means that a great number of the spare embryos could have accumulated mutations and faults that could render them unsuitable for research and therapeutic applications. If this is true, then the creation of fresh embryos for research purposes becomes more pressing.

Low quality embryos and even arrested embryos seem to have a place in embryonic stem cell research. Where high quality embryos with no genetic abnormalities are normally required for implantation⁵⁵, stem cell research can still benefit from abnormal and diseased embryos. Embryos with chromosomal abnormalities and mutations can be ‘important resource for functional genomics, drug screening and, perhaps eventually, cell and gene therapy’⁵⁶. In 2006 Dr Robert Jansen, medical director of Sydney IVF, applied to the National Health and Medical Research Council for two licenses to derive stem cells and create lines from abnormal embryos. The first license concerned embryos with genetic diseases such as Huntington’s, cystic fibrosis and muscular dystrophy. The second license was for creating lines from embryos that due to chromosomal abnormalities and mutations could not develop properly. ‘Both these new licenses are [to] intentionally produce abnormal stem cell lines so that they can be used for research into the relevant diseases’, said Jansen.⁵⁷ Also, in 2006 researchers managed to successfully derive human embryonic stem cells from arrested embryos. ‘All of the new lines, including lines derived from late arrested embryos, have normal karyotypes. These results demonstrate that arrested embryos are additional valuable resources to surplus and

⁵⁴ Hoffman D. I. et al, ‘Cryopreserved Embryos in the United States and Their Availability for Research’, *Fertility and Sterility*, vol. 79 (5), 2003, pp. 1063-1069.

⁵⁵ See for example the case of the deaf lesbian couple who asked for PGD in order to select for a deaf child. ‘Deaf Lesbians and Designer Babies’, *British Medical Journal*, vol. 325, Oct. 5, 2002, p. 7367.

⁵⁶ Trounson, A., ‘The Production and Directed Differentiation of Human Embryonic Stem Cells’, *Endocrine Reviews*, vol. 27 (2), 2006, pp. 208-219 (208).

⁵⁷ Skatssoon, J., ‘Stem Cell Scientists seek abnormal embryos’, *ABC Science Online*, 8 February 2006. <http://www.abc.net.au/science/news/stories/s1563987.htm>.

donated developing embryos and should be used to study early human development or derive pluripotent hESC.’⁵⁸ Furthermore, a study published in the *Reproductive Biomedicine Online* in 2004 suggests that frozen embryos are better for derivation of embryonic stem cell lines than fresh ones.⁵⁹

The combination of IVF and pre-implantation genetic diagnosis (PGD) could help researchers meet their needs for fresh and healthy embryonic stem cells while actually avoiding the necessary destruction of the embryo. It is common practice for couples who receive IVF treatment to decide to screen their embryos in order to identify genetic defects before they get implanted into the womb. Klimanaskaya et al. published a paper in *Nature* on the 26th of August 2006 where they announced that they managed to derive embryonic stem cells from the single blastomeres.⁶⁰ They found that ‘by growing the single blastomere overnight, the resulting cells could be used for both genetic testing and stem cell derivation without affecting the clinical outcome of the procedure.’ This finding opens up a new possibility of harvesting embryonic stem cell from embryos without necessarily destroying them. Parents who decide to screen their embryos, could be asked to allow the derivation of stem cells from the extracted blastomere, if they can be reassured that this technique will not harm the embryo⁶¹ nor will it affect the outcome of the PGD. Of course, this is a new approach that has not yet been fully developed. There are still issues and concerns that need to be answered through repeated experiments

⁵⁸ Stojkovic, M. et al., ‘Derivation of human Embryonic Stem Cells from Developing and Arrested Embryos’, *Stem Cells*, vol. 24, 2006, pp. 2669-2676 (2669).

⁵⁹ Sjögren, A., et al., ‘Human Blastocysts for the Development of Embryonic Stem Cells’, *Reproductive Biomedicine Online*, vol. 9, 2004, pp. 326-9.

⁶⁰ Klimanskaya, I., et al., ‘Human embryonic stem cell lines derived from single blastomeres’, *Nature*, vol. 444, 2006, pp. 481-485 (481).

⁶¹ DeMelo-Martin, I., Rosenwaks, Z., Fins, J. J., ‘New methods for deriving embryonic stem cell lines: are the ethical problems solved?’, *Fertility and Sterility*, vol. 86 (5), 2006, pp. 1330-1332; Johnson, M., ‘Human ES Cells and a Blastocyst from One Embryo: Exciting Science but Conflicting Ethics’, *Cell Stem Cell*, vol. 2 (2) 2008, pp. 103-104.

before scientists can be absolutely certain that allowing the blastomere to divide prior to genetic analysis will not risk cell-degeneration and therefore corrupt the result of the PGD.⁶²

A year later biotechnologists made a new important discovery for stem cell research. Researchers from the Hadassah Human Embryonic Stem Cell Research Centre in Israel developed a laser-based system for the isolation of inner cell mass (ICM) from IVF embryos and created human embryonic stem cell lines by circumventing immunosurgery that utilizes animal products. The use of animal products in stem cell line cultivation and preservation is one of the major issues that has been restricting clinical trials of human embryonic stem cell therapies. This new method can be ‘...applied for the derivation of new human embryonic stem cell lines in a xeno-free system for future clinical applications.’⁶³ The possibility of acquiring fresh and healthy stem cells from IVF embryos without destroying them, and creating stem cell lines through a xeno-free process, could solve many practical and ethical problems for scientists. This method could mean that fresh stem cell lines, both normal and abnormal, could be obtained for research and therapeutic purposes without the need to destroy the human embryo.

⁶² Simpson, J. L. ‘Blastomeres and stem cells’, *Nature*, vol. 444, 2006, pp. 432-434.

⁶³ Turetsky, T., et al., ‘Laser-assisted derivation of human embryonic stem cell lines from IVF embryos after preimplantation genetic diagnosis’, *Human Reproduction*, 2007, pp. 1-8 (1).

Adult, Foetal, iPS, Embryonic Germ Cells and ANT derived cells

The only need that cannot be satisfied with fresh and frozen IVF embryos and embryos that undergo PGD is the need for patient-specific and tailor-made stem cells for therapy. The creation of human embryos through somatic cell nuclear transfer using a cell from the patient's body and a donor's egg is suggested as the way to fulfil this need. SCNT cloning method, though, faces many ethical and practical problems. It entails the deliberate creation of human embryos for the sole purposes of using them for research, and it requires the use of large numbers of human oocytes, a very rare and difficult-to-obtain human product. I would like to suggest that adult, foetal and iPS cells could satisfy the demand for patient-specific and tailor-made stem cell lines without the ethical burden of destroying human life.

Research conducted with adult stem cells have shown that they are much more versatile and easy to differentiate than initially thought. Adult stem cells are plentiful in the human body and can be found in several tissues such as bone marrow, blood, brain, skin and many more. Stem cells extracted from bone marrow, for example, have been found to be as flexible as embryonic stem cells.⁶⁴ A major advantage of using adult stem cells for therapy is their ability to be used for self-transplantation. Stem cell taken from the body of the patient could be used for treatment and provide tissue that will be totally

⁶⁴ Jiang, Y., et al., 'Pluripotency of mesenchymal stem cells derived from adult marrow', *Nature*, vol. 418, 2002, pp. 41-49; Crain, B. J., Tran, S. D., Mezey, E., 'Transplanted human bone marrow cells generate new brain cells', *Journal of Neurological Science*, vol. 223 (1-2), 2005, pp. 121-123.

compatible with the patient's body. This means that there will be no need to use immunosuppressive drugs and the risk of transplant rejection is eliminated.

Also, adult stem cells similar to blastomeres of the preimplantation stage (BLSCS) have been discovered. These cells can be induced to differentiate and turn into pluripotent embryonic-like stem cells and they tend not to form tumours, which make them safer for therapeutic applications to humans.⁶⁵ Recently researchers have found stem cells in the menstrual blood (Endometrial Regenerative Cells) that can give rise to nine different cell types.⁶⁶ Finally, most adult stem cells, for example those found in skin, muscle, bone marrow or fat tissue, are easy to harvest, and their extraction does not harm the donor.

Foetal stem cells found in the amniotic fluid and the umbilical cord blood have also shown great possibilities.⁶⁷ These stem cells can easily be obtained either from aborted fetuses with the woman's permission⁶⁸ or during birth-giving. After extraction they could be kept in biobanks as a source for potential future therapies. A lot of parents nowadays choose to store their newborns' foetal stem cells for future use. As these cells carry the exact same genome as their child, they could potentially be an ideal source of

⁶⁵ Young H. E., Duplaa, C., Katz R., Thompson T., Hawkins K. C., Boev A. N., Henson, N. L., Heaton M., Sood R., Ashley D., et al., 'Adult-derived stem cells and their potential for use in tissue repair and molecular medicine,' *Journal of Cellular and Molecular Medicine*, vol. 9 (3), 2005, pp. 753-769.

⁶⁶ Meng. X., Ichim, T. E., Zhong, J., Rogers, A., Yin, Z., Jackson, J., Wang, H., Ge, W., Bogin. V., Chan K. W., Thebaud, B., Riordan N. H., 'Endometrial regenerative cells: A novel stem cell population', *Journal of Translational Medicine*, vol. 5 (1), 2005, p. 57.

⁶⁷ Kogler, G., Sensken, S., Airey J. A., Trapp, T., Muschen, M., Feldhahn, N., et al., 'A new human somatic stem cell form placenta cord blood with intrinsic pluripotent differentiation potential', *The Journal of Experimental Medicine*, vol. 200, 2004, pp. 123-135.

⁶⁸ Using stem cells from aborted fetuses is not completely morally uncontroversial. Some philosophers maintain that it is ethically wrong to try to derive 'good' from 'evil'. 'The life of a human being has been sacrificed in abortion, legitimately by hypothesis, for the good of someone else. As Kathleen Nolan put it, 'a moral intuition insists that being used once is enough' Meilaender, 'Some Protestant Reflections', p. 145. Also see Doerflinger, 'The Ethics of Funding Stem Cell Research: A Catholic Viewpoint'; Green, R. N., 'Benefiting from 'Evil': An incipient moral problem in human stem cell research', *Bioethics*, vol. 16 (6), 2002, pp. 544-556. We addressed this issue earlier in this chapter when discussing the prospect of using spare IVF embryos in biomedical research. The arguments remain the same.

transplant tissue, or for any other stem cell therapy available. It is possible that in the near future foetal stem cell storage might become a common practice or even obligatory by national health organizations as a prevention tactic, similar to vaccination. Therefore, it might be the case that in years to come there will be no need for SCNT cloning for the sole purpose of using the cloned embryo as a stem cell provider for the patient, because each potential patient will already have a stock of his or her own stem cells to use for therapeutic purposes.

Embryonic germ cells could also be used in research and therapies. Germ cells have shown encouraging signs of differentiation, and proliferation abilities.⁶⁹ Also, successful therapeutic trials on animals indicate that embryonic germ cells could potentially be used for treatment on humans too.⁷⁰ Furthermore, the origin of embryonic germ cells, from aborted fetuses, means that they are plentiful and easy to access.⁷¹

Adult stem cells, foetal stem cells and embryonic germ cells could also be donated for research purposes and drug testing. Stem cells extracted from patients, aborted fetuses or the placenta and umbilical cord of neonate with specific diseases and genetic abnormalities could be used as models for the study of the conditions as well as for the testing of drugs before they are administrated to the patient. The very important discovery of Dr Huard in 2005, which proved that adult stem cells have the same ability

⁶⁹ Trounson, A., Bongso, A., 'Embryonic stem cell lines from human blastocysts: somatic differentiation in vitro', *Nature Biotechnology*, vol. 18, 2000, pp.399-404; Reubinoff, B. E., Pera, M. F., Fong, C. Y., Trounson, A., Bongso, A., 'Research Errata', *Nature Biotechnology*, vol. 18, 2000, p. 559; Itskovitz-Eldor, J., Schuldiner, M., Karsenti, D., Eden, A., Yanuka, O., Amit, M., Soreq, H., and Benvenisty, N., 'Differentiation of human embryonic stem cells into embryoid bodies comprising the three embryonic germ layers', *Molecular Medicine*, vol. 6, 2001, pp. 88-95; Kerr, C.L. Shamblott, M. J., Gearhart, J. D., 'Pluripotent stem cell from germ cells', *Methods in Enzymology*, vol. 419, 2006, pp. 400-426.

⁷⁰ Mueller, D., Shamblott, M. J., Fox, H. E., Gearhart, J. D., Martin, L. J., 'Transplanted human embryonic germ cell-derived neural stem cells replace neurons and oligodendrocytes in the forebrain of neonatal mice with excitotoxic brain damage', *Journal of Neuroscience Research*, vol. 82 (5), 2005, pp. 592-608.

⁷¹ Gearhart, J. D., et al., 'Derivation of pluripotent stem cells from cultures human primordial germ cells', *Proceedings of the National Academy of Sciences*, vol. 95 (23), 1998, pp. 13726-13731.

as embryonic stem cells to multiply, was ground-breaking for the field of stem cell research.⁷² The discovery means that from one line of stem cells, many identical lines can be produced. The ability to self-replicate is significant because a large quantity of stem cells is required in stem cell research and therapy. This possibility clearly increases the research material available to the scientists and erases any ‘...doubts scientists may have had about the potential effectiveness of post-natal stem cells.’⁷³

Induced pluripotent stem cells (iPS cells) are another possible alternative source of stem cells. Scientists found a way to transform simple somatic cells to pluripotent cells with the same properties as these found in embryonic stem cells by artificially introducing specific genes into the cells.⁷⁴ Furthermore, in February 2008 a research team from the PrimeGen Biotech Company announced that they had found a new way to create iPS cells faster and more plentifully than previous methods. Not only that, but they developed a technique that does not ‘involve potentially tumour-causing viruses or genetic manipulations. And unlike embryonic stem cells, these methods use adult skin and other tissue from the patient, not embryos. ... John S. Sundsmo, President of PrimeGen Biotech said: “Because these methods are so rapid and efficient, we believe they may provide a springboard into therapies that use a patient’s own cells to prepare stem cells, thus, eliminating graft rejections and risks of graft versus host disease. We see

⁷² Deasy, B. M., Gharaibeh, B. M., Pollett, J. B., Jones, M. M., Lucas M. A., Kanda, Y., and Huard. J., ‘Long-Term Self-Renewal of Post-Natal Muscle-Derived Stem Cells’, *Molecular Biology of the Cell*, vol. 116, 2005, pp. 3323-3333.

⁷³ ‘Breakthrough Study Finds Adult Stem Cells’, *Science Daily*, 5/06/05, viewed on 25/09/2007 <http://www.sciencedaily.com/releases/2005/06/050624102413.htm>.

⁷⁴ Yamanaka, S., et al, ‘Generation of germline-competent induced pluripotent stem cells’, *Nature*, vol. 448, 2007, pp. 313-317; Yamanaka, S., et al., ‘Induction of Pluripotent Stem Cells from Adult Human Fibroblasts by Defined Factors’, *Cell*, vol. 131 (5), 30/11/2007, pp. 861-872; Kolata, G., ‘Scientists Bypass Need for Embryo to Get Stem Cells’, *The New York Times*, 21/11/2007.

these results as a critical step towards bringing safe, ethical, individualized stem cell treatments into the clinic.”⁷⁵

Finally, altered nuclear transfer (ANT) method could allow scientists to create pluripotent stem cells without the need to create and destroy a human embryo. ANT is a modified form of somatic cell nuclear transfer that produces a biological artefact that is not and cannot grow to be an embryo but can produce pluripotent cells. This method, though, has not yet been tested on human but only on mice.⁷⁶

Cybrids

A third potential source of stem cells that could be used mainly for research purposes but potentially also for therapeutic applications, are stem cells derived from laboratory created animal-human embryos, such as cybrids (cytoplasmic hybrids).

Cytoplasmic hybrids, or cybrids for short, are embryos produced through fusion of human somatic cells and animal ova. The nucleus is removed from a rabbit or a cow egg and the nucleus from a human somatic cell, for example a skin cell, is introduced. An electric pulse makes the egg start dividing and the process of mitosis and resultant cell division begins. This is the same technique that was used to produce Dolly, the first

⁷⁵ *Medical News Today*, ‘New Technique Produces Intermediate-iPS cells Faster and More Plentifully than Previous Methodologies’, 27/02/2008 viewed on 12/07/2008
<http://www.medicalnewstoday.com/articles/98687.php>.

⁷⁶ Meissner, A., Jaenisch, R., ‘Generation of nuclear transfer-derived pluripotent ES cells from cloned Cdx2-deficient blastocysts’, *Nature*, vol. 439, 2006, pp. 212-215.

cloned sheep in 1996. It is useful to distinguish cybrids from hybrids and chimeras. Hybrids are organisms that result from the cross-breeding of two different species (e.g. the mule) and chimeras are organisms composed of two genetically distinct types of cells.

The UK Parliament only very recently permitted the creation of cybrids for research purposes. The new Bill would also allow the creation of other types of human-animal embryos for research, but not for harvesting of embryonic stem cells that are intended for human application. These other kinds include: (i) true hybrids – embryos created with human eggs and animal sperm, or with animal eggs and human sperm; (ii) transgenic human embryos – human embryos into which animal DNA has been added; (iii) chimeric human embryos – human embryos into which one or more animal cells have been added. These types of admixed embryos could help scientists to better understand stem cell function, gene function and embryo development. Human-animal embryos will not be allowed to develop beyond the 14th day of gestation and it will be prohibited to implant them into humans or animals.⁷⁷ Some ethicists and the general public have strongly expressed their opposition to creating human-animal embryos on the grounds that it insults human dignity. It is worth noting, none of the scientists the Human Fertilization and Embryology Authority (HFEA) consulted could see a purpose for currently carrying out such research. However, such a method, if ever used, would be morally impermissible since it requires the use of human embryos and possibly destruction of human embryos for no compelling reason.⁷⁸

⁷⁷ Human Fertilization and Embryology Act 2008, chapter 22, article 4 (2)-(6).

⁷⁸ Science and Technology Committee, *Government proposals for the regulation of hybrid and chimera embryos*, Fifth Report of Session 2006-7, 28/03/2007; Human Fertilization and Embryology Authority, *A consultation on the Ethical and Social Implications of Creating human/animal embryos in research*, April 2007, especially pp. 43ff; Human Fertilization and Embryology Authority, *Hybrids and Chimeras: A*

According to the new law, cybrids should, also, never be implanted into a womb and should never be left to grow beyond the blastocyst stage. Although it is most likely that these embryos will never be able to reach maturity because of their peculiar nature⁷⁹, the law prohibits scientists from keeping them alive beyond the fourteenth-day stage. Cybrid embryos are supposed to be created especially for research and not for reproductive purposes. After cloning, scientists could artificially replace the mitochondrial DNA that belonged to the animal with human, and thus create an embryo that carries entirely human DNA. The critical question about cybrids is whether they should be considered “human” and given the same moral consideration and respect awarded to human embryos or not.

In 2004 a research team at Cambridge University fused human somatic cells with frog eggs using SCNT in order to produce embryonic stem cells. In 2004 the Human Fertilization and Embryology Act did not cover such practice, and Dr John Gurdon, who led the study, did not consider it necessary to ask the HEFA for permission, because ‘Our work did not produce anything that could vaguely be described as an embryo, we simply turned on genes.’⁸⁰ The news of this experiment prompted calls for a revision of the 1990 Human Fertilization and Embryology Act. Even in 2006 when two research teams, one for the University of Newcastle and one from King’s College London⁸¹ - asked the HFEA for permission to create human/animal hybrids by SCNT, the UK regulative authorities were still unprepared to deal with this request.

consultation on the Ethical and Social Implications of Creating human/animal embryos in research, April 2007, §2.19. Available at: http://www.hfea.gov.uk/docs/HFEA_Final.pdf.

⁷⁹ Mandavilli, A., ‘Scientists seek simple remedies to cloning conundrums’, *Nature Medicine*, vol. 11 (5), 2005, p. 459.

⁸⁰ Henderson, M., ‘Loophole allows human-animal cell experiments’, *Times Online*, 1/06/04, viewed on 12/07/08, <http://www.timesonline.co.uk/tol/news/uk/health/article437691.ece>.

⁸¹ Science and Technology Committee, *Government proposals for the regulation of hybrid and chimera embryos*, Fifth Report of Session 2006-7, p. 9.

HEFA had to hastily decide whether this type of embryos were “human” and therefore should be regulated by the HFEA or not and hence fall outside its remit. Ian Gibson, chairman of the Commons Science and Technology Committee referring to the experiment undertaken by the Cambridge team said that ‘...this is the sort of thing that makes many people uncomfortable’ and therefore the Parliament would want cross-species experiments involving human cells to be regulated.⁸² Maureen Dalziel the then Chief Executive of the HFEA said that ‘...a new, clearer legislation is *desperately* [emphasis added] needed that takes into account the massive scientific advances that have been taken place since the last Act was drafted and is less open to misinterpretation.’⁸³ Finally on the 11th of January 2007 the ‘HFEA released a statement indicating that the creation of cytoplasmic hybrid embryos *potentially* [emphasis added] falls within its remit to regulate and license.’⁸⁴ HFEA declared that ‘if there was scientific agreement that a hybrid embryo contained a full human genome, a reasonable interpretation of the Act would be that such embryos should be treated as live human embryos unless it could be clearly proved that the embryo could never be viable.’⁸⁵

The two criteria to define the nature of the embryo according to HFEA are: (i) presence of full human genome, and; (ii) viability. The first criterion was easy to check and a scientific consensus that human/animal hybrids created with SCNT will contain full human genome was met. The second criterion, though, was not so easy to establish. The scientists did not agree on whether such an embryo would be viable or not. The only way

⁸² Henderson, ‘Loophole allows human-animal cell experiments’.

⁸³ Science and Technology Committee, *Government proposals for the regulation of hybrid and chimera embryos*, Fifth Report of Session 2006-7, p. 37 (ev. 160).

⁸⁴ Science and Technology Committee, *Government proposals for the regulation of hybrid and chimera embryos*, Fifth Report of Session 2006-7, Table 3, p. 36.

⁸⁵ Science and Technology Committee, *Government proposals for the regulation of hybrid and chimera embryos*, Fifth Report of Session 2006-7, p. 38 (ev. 127).

to test viability would be to implant the embryo into a woman's uterus and wait to see whether it will develop. However, such a practice is illegal and since there is no other way to categorically prove or disprove the viability of cybrids, the UK government decided not to proceed with it. Yet, because they did not want to risk leaving an 'open window' in the legislation regarding cybrids, they decided not to consider viability as a defining factor. Finally, the UK Government announced that '[W]hile we agree with the HFEA that the general issues of hybrid and chimera embryos should be dealt with by Parliament, we consider that it is the role of the HFEA to deal with the applications for the creation of cytoplasmic hybrid embryos under current legislation with due speed and process.'⁸⁶

HFEA decided, for practical and legal reasons, to 'ignore' the viability factor when defining the "nature" of cybrids. Is it right for ethical reasons to do this? I believe not. The new emerging technologies in the area of biotechnology and reproductive science has forced ethicists, philosophers and scientists to re-think and a re-define the term 'human embryo.' The birth of Dolly the sheep in 1996 by somatic cell nuclear transfer (SCNT) proved that the presence of male and female gametes is not necessary for reproduction. Back then, the question was asked: if human clones are created, would they be human or not? The HFEA in 2001 had to rush and close the "loophole" that could allow reproductive cloning, although such a practice was already prohibited under UK law. However, the then existing definition of what constituted a 'human embryo' did not cover for methods that did not require the use of a male gamete.⁸⁷

⁸⁶ Science and Technology Committee, *Government proposals for the regulation of hybrid and chimera embryos*, Fifth Report of Session 2006-7, p. 43.

⁸⁷ Adam, D., 'Loophole legalizes human cloning', in *Nature*, vol. 414 (6862), 2001, p. 381, doi:10.1038/35106694.

In 2006 the possibility of using the same technique to fuse animal oocyte with the nucleus of a human somatic cell asked for further consideration of the definition “human embryo.” This time viability is added in the defining factors to be considered. The Catholic Church announced that viability should not be used as an indication of the humanhood of an embryo. The submission of the Catholic Church to HFEA mentions that embryos injected with animal cells should be treated as human beings where they have a preponderance of human genes.⁸⁸ ‘If the embryos are living, whether viable or not, they must be respected just like any other human person. Experimentation on embryos which is not directly therapeutic, is illicit. No objective, no matter how noble in itself, such as a foreseeable advantage to science, to other human beings or to society, can in any way, justify experimentation on living embryos or fetuses, whether it is viable or not, regardless if it is inside or outside the mother’s womb.’⁸⁹ For the Catholic Church cybrids are proper human embryos and like all human beings should be treated with the appropriate respect, which means that their life should never be violated.⁹⁰

Researchers agree with the Catholic theologians that cybrids are mostly human. The resulting embryo contains mostly human genes.⁹¹ Yet, they do not believe that this

⁸⁸ Glendhill, R., ‘Human-animal hybrid embryos should be legal says Catholic Church’, *Times Online*, 27/06/07, viewed on 27/06/07, <http://www.timesonline.co.uk/tol/comment/faith/article1993579.ece>

⁸⁹ Congregation for the Doctrine and Faith, *Donum Vitae: Instruction on Respect for Human Life in Its Origin and on the Dignity of Procreation*, Replies to Certain Questions of the Day February 22, 1987, I, 4, available at <http://www.cin.org/vatcong/donumvit.html>.

⁹⁰ It is worth noting that originally the Catholic Church opposed to the creation of cybrids because it believed that the scientists were trying to create embryos that were half animal, half human. This, they argued, was violation of human dignity. This initial reaction made the scientists to come forward and better explain what such a technique would result to. They explained that the resulting embryos will be mainly human since all but its mitochondrial DNA would come for the human donor. Although scientists were hoping that this information would convince the Catholic Church for the ethicality of the technique, it had the opposite result. For the Catholic Church all instances of human life are sacred and inviolable. Therefore, any practice that entails the destruction of a human embryo is immoral.

⁹¹ MacKenzie, D., ‘Scientists hit back at Catholic Church over ‘cybrids’’, *New Scientist*, 25/01/08, viewed on 20/07/2008 <http://www.newscientist.com/channel/being-human/dn13227-scientists-hit-back-at-catholic-church-over-cybrids.html>.

fact should stop them from using cybrids for research. Actually, this new possibility was presented by the scientists as a more ethically acceptable way to conduct embryonic stem cell research. Is this the case, though?

According to holistic anthropology one should look at the being's intrinsic nature before one can make any judgments about its moral status. First we need to look at what scientists say about the nature of cybrids. Rothenfluh et al. reviewed all the possible techniques in reproductive science and proposed the following biological definition of the "human embryo": 'A human embryo is a discrete entity that has arisen from either: i) the first mitotic division when fertilization of a human oocyte by a human sperm is complete or ii) any other process that initiates organized development of a biological entity with a human nuclear genome or altered human nuclear genome that has the potential to develop up to, or beyond, the stage at which the primitive streak appears, and has not yet reached 8 weeks of development since the first mitotic division.'⁹² They also suggest that viability should be considered '...a useful component of a definition of 'human embryo', as it allows a distinction between emerging technologies that may lead to live births from those that do not'⁹³.

There is a general suspicion in the scientific world that cybrid embryos will not be able to grow beyond the blastocyst stage even if they were to be implanted. As explained above, this suspicion cannot be proved because implantation of cybrid embryos is prohibited by law, at the moment.⁹⁴ However, if it were proven true, then it would mean

⁹² Findlay, J. K., Gear, M. L., Illingworth, P. J., Junk, S. M., Kay, G., Mackerras, A. H., Pope, A., Rothenfluh, H. S., Wilton, L., 'Human embryo: a biological definition', *Human Reproduction*, vol. 22 (4), 2006, pp. 905-911 (905).

⁹³ Findlay, 'Human embryo: a biological definition', p. 909.

⁹⁴ It is possible for scientists to make sure that implantation would never be successful by manipulating the somatic cell before it's been transferred into the animal ovum. See Meissner, A., and Jaenisch, R.,

that according to the above scientific definition, cybrids would not count as human embryos.

Also, according to holistic anthropology, human embryos have intrinsic moral value not in virtue of the qualities and faculties they possess as embryos but also for their active potentiality to grow into adult human persons. Of course, even in normally conceived human embryos this potentiality could never be actualized, yet we do not think that this denudes them of their humanity. Yet, if cybrids are proved to lack by nature this active possibility to grow into human persons, then they should not be ethically equated with human embryos.

In Chapter 6 I argued that the intrinsic moral value of the human embryo suggests respectful treatment but does not extend to support inviolability. Earlier in this chapter we showed that respectful treatment and killing or death are not always mutually exclusive even in the case of innocent human persons. The probable non-viability of the cybrid means that its intrinsic moral value is less or – if they are proved viable – equal to this of a human embryo. Therefore, the ethical criteria that would determine whether they should be used for research should be less or equally severe to those determining the use of human embryos.

One more issue that needs to be taken into account is that the creation of cybrids does not involve the use of a human oocyte, and therefore provides a good alternative to the use of donated human eggs in stem cell research. One of the proclaimed benefits of SCNT cloning is that it allows scientists to create patient-specific and tailor-made stem cell lines for research, therapy and drug testing. SCNT technique, though, faces the

‘Generation of nuclear transfer-derived pluripotent ES cells from clones Cdx2-deficient blastocysts’, *Nature*, vol. 439, 2006, pp. 212-215.

ethical problem of the destruction of the human embryo created, and the practical problem that it requires the use of human oocytes. However, extraction of human oocytes is an invasive and potentially dangerous for the life of the woman-donor operation⁹⁵. As a result very few women around the world come forward to donate oocytes for research purposes.⁹⁶ Cybrids could offer a solution to this problem. As Dr Stephen Minger states in his submission to the UK government:

‘Somatic cell nuclear transfer (SCNT) or “therapeutic cloning” is a technique that can be used to generate embryos which are genetically identical to a pre-existing mature organism. ... To date a large number of clone mammalian species have been generated including cows, pigs, dogs, cats, sheep, but this has not yet been achieved in primate species. One additional and perhaps more important use of SCNT is the generation of genetically-matched embryonic stem cell lines. Rather than the implantation of the cloned blastocyst, the inner cell mass is isolated in a manner analogous to that using IVF embryos and a cloned stem cell line can thus be obtained. ...One of the limiting factors to SCNT in humans is the requirement for large numbers of human eggs. Published data to date suggest that not only may hundreds or thousands of oocytes be required to derive a single cloned hES cell line, but the most optimal source of eggs is likely to be from woman less than 30

⁹⁵ Practice Committee of the American Society of Reproductive Medicine, ‘Ovarian Hyperstimulation Syndrome’, *Fertility Sterility*, vol. 80 (5), 2003, p. 1309-1314; Delvigne, A., Rozenberg, S., ‘Epidemiology and Prevention of Ovarian Hyperstimulation Syndrome (OHSS): A Review’, *Human Reproduction Update*, vol. 8, 2002, pp. 559-577; Pearson, H., ‘Health Effects of Egg Donation may take Decades to Emerge’, *Nature*, 2006, pp. 607-608, viewed on 10/09/07 <http://www.nature.com/news/2006/060807/full/442607a.html>; Whittemore, A. S. et al., ‘Characteristics Relating to Ovarian Cancer Risk: Collaborative Analysis of 12 US Case-control studies. II Invasive Epithelial Ovarian Cancers in White Women’, *American Journal of Epidemiology*, vol. 136 (10), 1996, pp. 1184-1203; Brinton, L. A., et al., ‘Ovarian Cancer Risk After the Use of Ovulation-Stimulating Drugs’, *Obstetric and Gynecology*, vol. 103 (6), 2004, pp. 1194-1203.

⁹⁶ McLeod, C., and Baylis F., ‘Donating Fresh Versus Frozen Embryos to Stem Cell Research: In Whose Interests?’, *Bioethics*, vol. 21 (9), 2007, pp. 465-477.

years of age, and that the eggs should be used directly after collection from the ovary rather than the use of those which fail to fertilize. The altruistic donation of oocytes specifically for SCNT where the efficiency of hES cells derivation is completely unknown but likely to be very low raises legitimate concerns about whether it is appropriate to encourage young women to undergo an invasive and potentially harmful procedure without any direct medical benefit. ...Another more practical alternative to the use of donated human eggs is to rely on non-human oocytes from domesticated livestock species which are available in large numbers as by-product of farming and the food industry.’⁹⁷

Therefore, because of: (i) the benefits of creating cytoplasmic hybrid embryos for the progress of biomedical research; (ii) the possibilities they might hold for therapeutic applications; (iii) their suitability to be used as disease-models for drug and toxicity tests combined with: (i) their elusive nature, and; (ii) the fact that their creation does not entail the use of a valuable and rare human ovum, this alternative may not be ethically *preferable* but definitely ethically *tolerated*. If existing sources could satisfy the scientific needs regarding stem cell research, then permission should not be granted for the creation of cytoplasmic hybrid embryos. However, if it can be proven that the creation of a new embryo - cybrid or ‘normal’ - is paramount for their research and not other available source could cover their needs, then it is ethically more tolerable to permit the creation of a cybrid than a ‘normal’ human embryo.

⁹⁷ Governmental Proposals for the regulation of hybrid and chimera embryos, Fifth Report of Session 2006-7, volume II, Oral and written evidence, ev. 129. Submission from Dr Stephen Minger, Director, Stem Cell Biology Laboratory, Wolfson Centre for Age-Related Disease, King’s College, London.

ACQUIRING STEM CELL for RESEARCH				
METHOD	Ethically Preferable	Ethically Tolerable	Ethically Tolerable (under conditions)	Unethical
Creation of Embryos				
Create Human Embryos using IVF				X
Create Human Embryos using SCNT				X
Create Cybrid using animal oocyte and human somatic cells			X	
Use of Existing Human Embryos				
Use spare IVF embryos		X		
Use pluripotent stem cells from PGD	X			
Use of non-Embryonic Stem Cells				
Use adult stem cells	X			
Use foetal stem cells	X			
Use embryonic germ cells	X			
Use iPS cells	X			
Use of cells from ANT	X			

The table above shows all the possible methods of investigation scientists could use in stem cell research and how ethically acceptable or unacceptable they are ranked under the theory of holistic anthropology and intrinsic moral value.

Concluding Remarks

Holistic anthropology revealed the intrinsic nature of the human embryo. The human embryo is a human being with intrinsic moral value that deserves to be treated with respect. Intrinsic moral value, though, does not equate with full moral value and therefore does not imply inviolability. Furthermore, as we argued in this chapter, respectful behaviour does not necessarily mean that the object of respect is treated as a sacrosanct. Respect is an attitude and a mindset as well as the moral norm not to use an entity that deserves respect *merely* as means to our ends. Hence, we have a moral duty then to respect the life of the human embryo and not use it and destroy it cavalierly.

Respecting human life in the particular case of biomedical research has two sides. The first is our moral obligation to continue research that could lead to new therapies and cures for many degenerative and lethal diseases, and in this way alleviate pain and suffering for future people and generally increase the welfare of humankind. The second is our moral obligation to preserve human life, even human embryonic life by protecting it and respecting it. Balancing these two strong moral obligations is very difficult. Unfortunately, there is no magical moral calculator that could tell us which of these moral obligations has priority over the other. The only thing one can do is approach the issue of using human embryos in biomedical research with respectful attitude and hope to make the right decision based upon the best information available.

I said that being respectful is not to behave in a cavalier fashion. This means that when scientific research could be conducted without the creation and consequently

destruction of a human embryo, then this alternative method should be preferred. As we saw above, there are many alternative research methods that do not require the destruction of a human embryo. Furthermore, I argued that the *Principle of Waste Avoidance* combined with the moral obligation to continue research that aims at increasing health and welfare for humanity allows us to use donated unwanted embryos created for IVF purposes for experimentation.

When in 2007 the HFEA was discussing the possibility of permitting the creation of human cytoplasmic hybrids, the discussion was focused on whether cybrids should be considered as human embryos and what their moral status should be. The government decided to recognize cybrids legally as human embryos. If this is the case, then according to holistic anthropology and the moral obligation to recognize and respect the intrinsic moral value of human embryos, cybrids should also be treated with the same respect. Therefore, cybrids should not be created if there are other alternative methods to cover this particular aspect of research. Yet, we should note that cybrids are not created by the fusion of 100% human material, but they are animal/human creations that carry 99% of human DNA and 1% animal DNA.

Actually, the only gamete used in this particular method is an animal gamete, where the other component is a human somatic cell. Furthermore, although not proven yet, there is a general consensus among the scientific world that these embryos even if placed into a uterus would not be able to implant and develop beyond the blastocyst stage.

These two important factors, somewhat differentiate these embryos from other type of human embryos that are created either with the fusion of two human gametes, or

by SCNT, again using exclusively human material. Although the HFEA decided to overlook these two distinctions when deciding the legal status of the cybrid embryo, the moral implications of these differences should not be ignored. Cybrid embryos could be considered a morally better option to that of creating human embryos via IVF or SCNT because first, the technique of creating cybrids does not require the use of a human oocyte and, second, the resulting organisms is not entirely human, and thirdly the resulting organism is not viable past the blastocyst stage, and therefore could never grow to be an adult human being. For these reasons, we should render this option morally tolerable.

Biomedical research is of paramount importance for the future of humanity and should not be unnecessarily hindered. Respecting human life is also paramount for the *moral* present and future of humanity and should never be neglected. Scientists should approach the issue of using human embryos for research with humility and modesty, while the bioethical committees and the public should view the issue with open-mindedness and progressiveness. Both parties, though, should retain and promote a respectful attitude towards the intrinsic moral value of human life and work together for the material as well as moral betterment of human life.

Chapter 8

CONCLUSION

The scope of this thesis was to examine the moral status of the human embryo in relation to human embryonic stem cell research. Two main tasks were undertaken. The first was to establish intrinsic moral value for the human embryo. I argued that there is a basic level of moral worth that should be attributed to all human beings in virtue of their intrinsic nature and regardless of their personal capacities and other abilities. It seems to be the common intuition that human embryos deserve appropriate respect. It is not only the opinion of the general public that leans towards this view, but such a statement can be found in the proclamations of many ethics advisory boards' proclamations. For example, the US National Bioethics Advisory Commission (NBAC) maintains that '...human embryos deserve respect as a form of human life.'¹ Also, the Geron Ethics Advisory Board (GEAB) says: 'The blastocyst must be treated with the respect appropriate to early human embryonic tissue.'² However, the assumption that embryos have intrinsic value, despite its apparent popularity, requires a philosophical justification. The second task was to show how

¹ National Bioethics Advisory Commission, *'Ethical Issues in Human Stem Cell Research: Report and Recommendations of the National Bioethics Advisory Commission'*, Rockville, Maryland, September 1999, p. 15, available at <http://bioethics.georgetown.edu/nbac/pubs.htm>.

² Geron Ethics Advisory Board, 1999. Research with human embryonic stem cells: Ethical considerations, *Hastings Centre Report*, vol. 29 (2), pp. 31-36 (31).

theological ideas can enter the public bioethical debate by surpassing the narrow borders of a specific doctrinal teaching.

Before one begins discussing the philosophical aspect of the permissibility, or impermissibility, of using human embryos in biomedical research, one should be aware of the scientific, medical and biotechnological facts relevant to this particular research. Chapter 2 demonstrated that there is a variety of pluripotent stem cells (embryonic, foetal, adult stem cells and embryonic germ cells), including three varieties that are able to be manufactured under laboratory conditions (induced pluripotent stem cells, iPS cells, stem cells from cytoplasmic hybrids, cybrids, and stem cells created through altered nuclear transfer technique, ANT).³ In particular adult stem cells - concerning which there is no ethical controversy regarding their use in research and therapy - are already being used for therapeutic purposes, including treatment of conditions such as brain tumour, ovarian cancer, leukaemia and Parkinson's Disease. At the time of writing embryonic stem cells are still not considered safe enough to be used for clinical trials.

A detailed analysis of all the potential applications of stem cell research reveals its great importance for the future (of many areas) of scientific research and the welfare of humanity. There are five possible applications:

- (i) Stem cell research can elucidate useful information regarding early human development. Medical conditions such as cancer and birth defects that are caused by abnormal cell division and differentiation could be investigated in detail and new cures and preventive techniques could be developed;

³ See Table 1, Introduction.

- (ii) Stem cell cultures permit the testing of the effect of drugs upon human tissues. Researchers could develop disease models to test the effect of new drugs;
- (iii) Stem cells could be used for damaged cell and tissue replacement therapies. There is a severe shortage of tissue and organs available for transplantation around the world. Stem cell therapy could help to overcome this problem. Biotechnologists could differentiate *in vitro* stem cells to colonise and repair damaged tissue and organs. Adult stem cells have already been successfully used for replacement therapy. To date, embryonic stem cells have not been used in therapeutic applications. However, embryonic stem cell created through SCNT technique could be made to be perfectly compatible with the a patient's DNA and hence alleviate the need for immunosuppressive drugs;
- (iv) Stem cells may be useful for screening potential toxins in substances such as pesticides, cosmetics and most of household and industrial chemicals. Before all these products are released to the market they have to go through many tests mainly on animals in order to secure that they are safe for human use. Using stem cells for these experiments means that the need for testing animals will be significantly reduced; and
- (v) Stem cells can be used in trial gene therapies. Stem cells taken from the patient's body can be infused with the therapeutic transgene and introduced back into the patient's body. So far, only adult stem cells have been used in these trials.

Notwithstanding the great benefits that could result from stem cell research, the research is restricted by ethical issues. The main ethical question regarding the moral correctness of embryonic stem cell research is the question of the moral status of the human embryo. An overview of the different views proposed by ethicists regarding the moral value of human embryonic life, and the point at which human life acquires moral importance reveals the complexity of this bioethical debate. It has been suggested that human life becomes valuable at the point of:

- (i) Fertilization. Fertilization is the moment when the sperm and the oocyte fuse to give rise to a new human being. The zygote formed contains unique human genetic material and has the potential to grow into an adult human person. This is the view mainly defended by the Catholic Church and thinkers such as Donald McCarthy, Albert Moraczewski⁴, and Elizabeth Harman⁵;
- (ii) Implantation. After fertilization it takes almost ten days before the embryo implants in the uterine wall and starts receiving nutrition from the mother's body. The moment of implantation marks the beginning of pregnancy. This view has implications for embryos conceived outside of the woman's body through artificial reproductive techniques. Some have argued that human life 'begins in the womb not in a petri dish or refrigerator'⁶;
- (iii) Fourteenth day. The fourteenth day of gestation is approximately the point when the embryo loses its capacity to split into two or more different

⁴ McCarthy, D. G., and Moraczewski, A. S., (eds.), *An Ethical Evaluation of Fetal Experimentation: An Interdisciplinary Study*, St. Louis, MO: Pope John XXIII Medical-Moral Research Education Centre, 1976.

⁵ Harman, E., 'Creation ethics: the moral status of early fetuses and the ethics of abortion', *Philosophy and Public Affairs*, vol. 28 (4), 1999, pp. 310-324.

⁶ 'Hatch Backs Research Cloning', *The New American*, 3 June 2002, viewed on 12/10/2007, http://findarticles.com/p/articles/mi_m0JZS/is_11_18/ai_n25048763.

embryos, and also when differentiation starts and the first cells that will later form the primitive streak appear. It is mainly these reasons that have led some ethicists such as Norman Ford⁷, Richard McCormick⁸ and Mary Warnock⁹ to argue that this is the point when the life of a human *individual* begins;

- (iv) Quickening. This is an old view stemming from the old Aristotelian position that quickening is the moment that the foetus is infused with a rational human soul. Augustine and Thomas Aquinas adopted this position, and until the 19th century this was the official position of the Catholic Church. This view is very unpopular among contemporary ethicists;
- (v) Viability. This is the point when the foetus is potentially viable outside of the mother's womb. The moment of viability is placed somewhere between twenty and twenty-eight weeks of gestation. Many ethicists support the view that the human foetus acquires moral value when it becomes able to survive independently of the mother.¹⁰ However, the fact that the viability hugely depends on the medical resources available at the moment and place and time of birth, and on the view that the abilities of a foetus one day before birth and of a neonate a day after birth are not discernibly different challenge this view¹¹;

⁷ Ford, N. M., *When did I begin? Conception of the Human Individual in History*, Philosophy and Science, Cambridge: Cambridge University Press, 1988.

⁸ McCorrick, R., 'Who and What is the Preembryo?', *Kennedy Institute of Ethics Journal*, vol. 1 (1), 1991, pp. 1-15.

⁹ Warnock, M., 'Do Human Cells Have Rights?' *Bioethics*, vol. 1, 1987, pp. 11-12.

¹⁰ Cameron, C., Williamson, R., 'In the world of Dolly, when does a human embryo acquire respect?', *Journal of Medical Ethics*, vol. 31, 2005, pp. 215-220.

¹¹ ¹¹ Singer, P., *Practical Ethics*, Cambridge: Cambridge University Press, 1979; Savulescu, J., 'Is current practice around late termination of pregnancy eugenic and discriminatory? Maternal interests and abortion', *Journal of Medical Ethics*, vol. 27, 2001, pp. 165-171.

- (vi) Birth. The moment of birth seems like the obvious point at which human life becomes valuable. This is the moment when people in most countries acquire legal status. However, the position that there is no actual difference between the late-term foetus and the newly born child, questions the moral relevance of birth. However, Jose Luis Bermudez argues that there are behavioural and neuro-physiological differences between neonate and late-term fetuses that justify the view that birth is the time human life becomes morally valuable.¹²
- (vii) Post-Birth. This is also known as the personalist view. Philosophers such as Peter Singer¹³, Michael Tooley¹⁴, John Harris¹⁵, Julian Savulescu¹⁶ and other argue that human life become valuable when the human becomes a person. Persons are the beings that have capacities such as self-consciousness and self-awareness, can consider themselves in space and time and have the ability to use language. Human beings do not acquire these capacities until some time after birth, probably sometime between the first and the second year of age.

However, the moral status of the human embryo is not the only ethical problem bioethicists are faced with when discussing the morality of stem cell research. The moral obligation to the present and future human persons that could benefit from the

¹² Bermudez, J. L., 'The Moral Significance of Birth', *Ethics*, vol. 106 (2), 1996, pp. 378-403.

¹³ Singer, *Practical Ethics*.

¹⁴ Tooley, M., 'Abortion and Infanticide', in P. Singer (ed.), *Applied Ethics*, Oxford, New York: Oxford University Press, 1983, pp. 57-85.

¹⁵ Harris, J., *The Value of Life*, London: Routledge, 1989.

¹⁶ Savulescu, J., 'Ethics of Stem Cell and Cloning Research', available at http://www.practicaethics.ox.ac.uk/Resources/Cloning_StemCell/ethics_stemcell_cloningresearch.pdf.

practical application of stem cell research needs also to be taken under consideration. Balancing these two moral obligations is what ethicists are called to achieve.

The continuation of stem cell research is of paramount importance of the future and welfare of humanity. However, the moral value of human embryonic life should be taken into account when considering the various methods and paths that stem cell research can take. Therefore, an examination, or re-examination of the moral status of the human embryo is necessary before any decisions are made.

All this information set the background for the reader to understand the importance of this particular research for the future and welfare of humanity, but at the same time comprehend what is morally at stake and why this type of research has stirred such an ethical upheaval.

An in depth analysis of the most popular and influential positions concerning the bioethical question of the moral status of the human embryo as presented by the three major thinkers, John Harris, Mary Warnock, and the theologian Hugo Tristram Engelhardt Jr..

Both John Harris and Mary Warnock support the use of human embryos in biomedical research. However, the philosophical and ethical arguments on which they found their positions differ. John Harris holds the personalist view, which maintains that only persons have moral value and are worthy of respect and protection. Personhood is mainly understood in Lockean terms, as a cluster of characteristics like self-consciousness, self-awareness and ability to use language. Being human has no moral significance. Moral value stems from one's ability to value his or her own life and to consider oneself in space and time. Human embryos clearly lack all of these abilities and qualities. Their existence does not carry any kind or level of direct moral significance. On the contrary, the lives of all the people who could be saved if stem

cell therapy is established are infinitely more valuable and morally important than the life of human embryos. Therefore, human embryos should be used in research for the benefit of humanity today and in the future.

Mary Warnock supports the individualist view. She believes that being a human is important as long as they count as a human *individual*. A human individual is someone who can track back his or her existence and see the history of his or her development as an organism and as a person. The beginning of our individuality is not the moment of conception. Individuality begins only when the possibility for twinning has passed and the process of differentiation has begun. This happens approximately fourteen days after conception. Only then can one be certain of how many individuals will emerge from a single conceptus. Before this moment, the human entity that exists does not count as a human individual with full moral status. It is merely a loose collection of cells, an entity with no rights to be respected and protected. Therefore, concludes Warnock, it is morally correct to use embryos that are up to two weeks old in research. After the fourteenth-day, however, threshold embryos acquire full moral status which renders their use in biomedical research morally impermissible.

Hugo Tristram Engelhardt Jr. is the third philosopher considered in-depth in this thesis. He is an American Orthodox Christian theologian and philosopher. Where most theologians who preoccupied themselves with this debate would either proclaim a strong theological position that is derived from their doctrinal beliefs, or would try to make their view accessible to the secular audience by underplaying the theological views and watering-down their doctrinal beliefs, Engelhardt follows a different route. Instead of trying to merge the secular and the religious, he advocates absolute separation. A traditional Christian position regarding the moral status of the human embryo is proposed for his moral friends, his fellow Christians. According to this

view, human life is sacred and inviolable at all instances and under all occasions. As a result, using human embryos for research is morally wrong. For the rest of the society, his moral strangers, Engelhardt supports the personalist view. Under this view, using embryos in research is not ethically wrong because embryos lack personhood and consequently moral status.

In the ten years over which the debate regarding the moral status of the human embryo has been developed, it has been proved very difficult to combine secular and theological views (a method followed by Norman Ford¹⁷, Karl Rahner¹⁸ and Joseph Fletcher¹⁹), or even to find a point of general convergence (a method followed by Ronald Cole-Turner²⁰ and Ted Peters²¹). Engelhardt tried to tackle this problem by proposing a libertarian solution. He suggested that religious and secular societal groups should be kept separate and they should be allowed to form and establish their own laws and regulations. A general government would be in place just to ensure that at a macro-level the relationship between these micro-societies remains peaceful. However, I argued that segregating religious and secular groups might not be the best way to deal with ethical polyphony in contemporary secular society. Collaboration, acceptance and friendship can only be developed through dialogue and mutual exchange of ideas. Segregation and ethical isolation could lead to misunderstanding, fear or even demonization of ethically foreign groups and ideas.

Theologians feel that the contribution of theological ideas to the bioethical debate regarding the moral status of the human embryos is of great importance. '[T]he

¹⁷ Ford, N., *The Prenatal Person: Ethics from Conception to Birth*, Oxford: Blackwell Publishing, 2002.

¹⁸ Rahner, K., 'The Problem of Genetic Manipulation', in *Theological Investigations 9*, New York: Herder and Herder, 1972.

¹⁹ Fletcher, J. F., *Morals and Medicine*, Princeton, NJ: Princeton University Press, 1954.

²⁰ Cole-Turner, R., *The New Genesis: Theology and the Genetic Revolution*, Louisville, KY: Westminster/John Knox, 1993.

²¹ Peters, T., *Playing God? Genetic Determinism and Human Freedom*, New York; London: Routledge, 2003.

subject matter of bioethics could hardly be of greater moment to those who hold the Christian view of the world. The core question of which every bioethics issue is ultimately derivative is that of human nature. ...it has become standard practice to translate Christian moral argument into secular language for public purposes. As a communication strategy in a changing culture, this is perhaps as inevitable as it is estimable.’²² James G. Hanink noting the ‘protracted moral crisis’ of our times suggests that ‘[R]eflective Christians should be ready to explore, with measured confidence, the crises that we all face. Even nonbelievers should welcome such an enterprise. If nothing else, it will provide them with a “second opinion” on a whole range of disputed questions, and worthy colleagues in an ongoing public conversation.’²³

The difficult task is that they need to address a secular audience and not a group of believers. References to doctrinal beliefs and faith, such as the belief in the existence of the soul, would be of very little, if any, help to them. I therefore suggested a different method of approach. My approach looks at the fundamental philosophical and theoretical edifices that support the particular beliefs, and which dictate a specific moral view on this issue, and examines whether these views could be defended outside their supportive environment.

I examined holistic anthropology, a philosophical anthropology of Judeo-Christian origin, as an alternative position to the already proposed secular ones. Chapter 5 followed the historical/theological routes of holistic anthropology. I demonstrated how the concept of the psychosomatic unity of human nature is developed in the Old and New Testament and also that it compares to the dualistic

²² Cameron, N. M. ‘Bioethics in Christianity’, in St. G. Post (ed.), *Encyclopedia of Bioethics*, 3rd ed., New York: Macmillan Reference USA, 2004, p. 402.

²³ Hanink, J. G., ‘On Germain Grisez: Can Christian Ethics Give Answers?’, in A. Verhey and St. E. Lammers (eds.), *Theological Voices in Medical Ethics*, Grand Rapids, Mich: W. E. Eerdmans, 1993.

concepts that penetrated Christian thinking through its contact mainly with the Ancient Greek philosophy. The idea that human beings are physical and spiritual unities is integrally connected with the doctrine of divine creation and *Imago Dei* of Christian tradition. Within the Christian theology these two metaphysical beliefs give support and justification to the philosophical anthropological stance that renders life in general and human life in particular, intrinsically morally valuable.

The attempt to find a way for a Christian philosophical theory to become acceptable in a religion-neutral biomedical debate is not to deny its connection to the Christian religion; rather it endeavours to establish a scientific, philosophical and empirical validation for it. The task was to see whether this philosophical view could also be justified without the support of the Christian doctrines. In Chapter 5 it was demonstrated that the concept of holism is not exclusive to Christian philosophical tradition. The science of biology, systems theory in conjunction with philosophy of mind, medicine, psychiatry and psychology offered scientific, philosophical as well as empirical support to the theory of holistic anthropology.

Systems biology theory argues that a system is more than the sum of its parts. This means that biological systems, such as the human organism cannot be fully understood if they are only examined through a reductive method of analysis. Walther Elsasser²⁴ is one of the pioneers of systems biology theory, and Michael Esfeld²⁵ is one of the first that attempted to link systems theory and philosophy. They believe that by looking at a system as a whole and trying to understand its unique properties as a unity, more could be revealed about the nature of the system. According to this theory the mental and spiritual properties of human beings could be understood as

²⁴ Elsasser, W. M. *Reflections on a theory of Organisms: Holism in Biology*, Baltimore: Johns Hopkins Press, 1998.

²⁵ Esfeld, M., *Holism in Philosophy of Mind and Philosophy of Physics*, Dordrecht; London: Kluwer Academic, 2001.

properties of the whole system, namely the human being as a whole, and not of just a part of it, such as the brain. Contemporary philosophers of mind, such as John Searle, believe that it is time for a change in the methodology of the scientific and philosophical investigation; it is time to move from the dictatorship of dualism and monism to holism.²⁶

Alternative medicine, psychology and psychiatry are areas where holism and holistic anthropology are translated into practice. Perceiving the human person as a whole and recognising the interconnection and interrelation between its different assets has been the methodology of traditional medicine for millennia. Even today, in an era where modern medicine prevails, holistic methods are still considered useful and valuable for some areas of medical practice. Independent scientific research has established the therapeutic efficacy of holistic medicine. Psychologists believe that ‘personal problems seem to be both psychological and spiritual, and can be approached from either perspective; the two aspects are distinct but complementary.’²⁷ Similarly, the Royal College of Psychiatrists recognises the role of spirituality in the human well-being.²⁸

Establishing scientific and philosophical support for holism outside the realm of the Judeo-Christian traditions led to the conclusion that human nature is holistic and therefore, all human beings, embryos included, can be considered as psychosomatic unities.

Chapter 6 offered an evaluation of the three theories presented in this thesis, namely personalism, individualism and holism in relation to the question of the moral

²⁶ Searle, J., ‘What’s Wrong with the Philosophy of Mind?’, in Richard Warner and Tadeusz Szubka (eds.), *The Mind-Body Problem: A Guide to the Current Debate*, Oxford: Blackwell, 1994, pp. 277-298.

²⁷ Bennen, B., *Psychotherapy and the Spiritual Quest*, London: Hodder and Stoughton, 1998, quoted in Watts, F., *Theology and Psychology*, Cambridge: Ashgate, 2002, p. 73.

²⁸ ‘Spirituality and Psychiatry Special Interest Group’, The Royal College of Psychiatrists, viewed on 12/07/07, <http://www.rcpsych.ac.uk/college/specialinterestgroups/spirituality.aspx>.

status of the human embryo. It was argued that 'full moral value' is the kind of value rightly attributed to human persons that combine a number of personal, relational, societal qualities. Human embryos lack all the attributes that supply human persons with full moral value. The only thing that human persons and human embryos share is their fundamental nature. Intrinsic moral value and not full moral status is the kind of value that is based on one's fundamental nature and hence, this is the kind of value appropriate for human embryos. Intrinsic moral value is the kind of irreducible value that demands respectful treatment but does not secure inviolability.

The evaluation of the three philosophical/anthropological theories attempted to discern which of them best encapsulates the fundamental nature of human beings. Personalism and individualism appeared to have philosophical and scientific shortfalls. According to the personalist theory what we are fundamentally is persons. According to this view, our particular life begins only when we acquire capacities such as self-awareness and self-consciousness. Therefore, according to this view one could never have been an embryo or a foetus and could never become an aged human being with diminished mental abilities. However, this is a fact of life that cannot be denied.

Individualism on the other hand seemed is based on the false assumption that the pre-fourteenth day human embryo cannot count as an individual organism because there is not enough organisation between its cells. Developmental embryology proves this assumption wrong. The human embryo functions as an organism right from the two-cell stage. Furthermore, individualism argues that divisibility reduces the moral value of a being. It was demonstrated that this is a philosophical and logical fallacy; whether a being has the ability to divide to two or more different individuals has not bearing on its moral value.

Holism seems to offer a more comprehensive and conclusive account of human nature. It takes into consideration all different aspects of human life, biological, mental and spiritual and accounts for its developmental and collaborative nature. It belongs to an old philosophical tradition, the Judeo-Christian tradition, but can also be supported by contemporary scientific theories, such as systems biology theory, and medical practices, such as holistic medicine, psychology and psychiatry.

The final step has been to investigate what kind of impact such a philosophical-anthropological theory could have for biomedical research. It is important to know what its practical application would mean for embryonic stem cell research. Two basic premises were taken as a starting point; the first is that the human embryo has intrinsic moral value which is irreducible and requires recognition and respect. The second premise is that there are many ways of conducting stem cell research that do not require the creation and destruction of human embryos. Consequently, respectful treatment of the human embryo and recognition of the intrinsic value of human life requires from scientists involved in stem cell research to refrain from creating new human embryos just for the purpose of using them in biomedical research when there are other alternative methods that can adequately replace the need for human embryo creation and destruction.

Respectful treatment does not mean that the lives of human embryos are inviolable. Examples, such as the 'killing' anencephalic children that are destined to die in order to donate their organs to other children that have a chance to live, or that of multifoetal reduction in cases of multiple births, were given in order to support this claim. I made the argument that even the 'killing' or being 'destined to death' of healthy adult human person, as in the case of defence war, does not constitute disrespect for human life. Disrespectful treatment is the cavalier treatment and waste

of human life. Disrespectful treatment in the specific case of stem cell research is the deliberate creation and destruction of human embryonic life when there are other, equally effective, alternatives available.

Some of these alternatives are ethically unproblematic, such as the use of adult and foetal stem cells. Others are ethically tolerable, such as the use of donated spare IVF embryos and the creation of cytoplasmic hybrids (cybrids).²⁹ Although some maintain that respectful treatment could never justify the 'killing' of embryos, I argued that the principle of waste avoidance in combination with our moral imperative to produce therapies for degenerative and lethal disease could justify the action.

In the case of cybrids it has been proposed that they should be given the same moral status as that of human embryos because they contain 99% human DNA.³⁰ However, I suggested that their chimeric nature, the fact that they do not require the use of human oocytes and their most probable inability to grow beyond the blastocyst stage render them an ethically more tolerable for use as a source of stem cells, than those derived from human embryos created through IVF or SCNT technique.

Under the holistic-anthropology-view, the possibility of there being a need in the future to create new human embryos for research or perhaps therapeutic applications is not dismissed. As mentioned above, holistic anthropology does not morally equate human embryonic life with human personal life. Rather it justifies and underlines the intrinsic value of all instances of human life that should always be taken into account. Therefore, if the future advances in biotechnology and medicine render the creation of human embryos for stem cell research and therapy absolutely necessary for the health and welfare of humanity, and if there are no other alternatives

²⁹ See Table 1, Chapter 7.

³⁰ Glendhill, R., 'Human-animal hybrid embryos should be legal says Catholic Church', *Times Online*, 27/06/07, viewed on 27/06/07, <http://www.timesonline.co.uk/tol/comment/faith/article1993579.ece>.

available that could replace the role of human embryos, then the creation and destruction of human embryos should be allowed. As in the case of 'defensive war' this will not mean that embryos have lost their intrinsic value. Rather it will mean that after all alternatives routes have been exhausted, the 'sacrifice' of few for the benefit of the many has been judged absolutely necessary.

It seems that biotechnology and medicine have not yet reached the final stage where the creation of embryos is unavoidable. As long as there are substitute sources of embryonic stem cells and other stem cells that could be used for research, the theory of holistic anthropology and intrinsic moral value would require us to renounce the deliberate creation and destruction of human embryos solely for research purposes as an ethically unacceptable practice.

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