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**Re-evaluating the moral status
of the embryo and pre-sentient fetus:
a multi-criterial, multi-level approach**

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ABSTRACT

This thesis contends that the concept of moral status, which earmarks those entities towards which we have moral obligations, ought to be re-evaluated so that it is ascribed on the basis of multiple criteria, each of which may have increasing levels of strength. This will produce a more nuanced framework of evaluation that will guide how human embryos and pre-sentient fetuses ought to be treated, whether created through natural reproduction or *in vitro* fertilisation.

Most literature focusing on the embryo and fetus has concluded that there are no grounds for ascribing moral status before sentience. My original contribution is to argue that a combination of four criteria ascribe a minimal moral status that incurs limits on how these entities ought to be treated: life, genetic potential, relationship and function. I analyse the weaknesses of traditional concepts of moral status and argue for a multi-criterial analysis, inspired by Mary-Anne Warren's work (1997). Her consideration of both intrinsic and relational criteria leads to a more development-appropriate analysis of the entity and its changing needs for protection. Intuitive views have suggested that moral status evolves gradually (Little 2008), but no previous work has considered how and why a minimal moral status should be applied to the embryo. My original model argues that there ought to be increasing obligations towards the embryo/fetus at different stages of development before sentience. Theoretical analysis is through a virtue ethics lens, considering not just the embryo's qualities but also the circumstances and the motivation of the moral agent, assessing their actions against the virtues of compassion and justice. Three case studies on stem cell research, germline gene therapy and ectogenesis are then used to illustrate the practical advantages of this new model.

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LEGAL CASES

Evans v Amicus Healthcare Ltd [2003] EWHC 2161 (Fam).

Evans v United Kingdom App. no. 6339/05 [2007] ECHR 264.

In re Quinlan (1976) 70 N.J. 10.

In re TACP (Fla.1992) 609 So. 2d 588.

Re A (Children)(Conjoined Twins: Medical Treatment)(No 1) [2001] Fam 147.

Roe v Wade (1973) 410 U.S. 113.

Wyatt v Portsmouth NHS Trust (No 3) [2005] EWHC 693 (Fam).

Yearworth v North Bristol NHS Trust [2009] EWCA Civ 37.

STATUTES

Abortion Act 1967 (c.87). London: HMSO. Available from:
<http://www.legislation.gov.uk/ukpga/1967/87/contents> [Accessed 15 July 2017].

Congenital Disabilities (Civil Liability) Act 1976 (c.28). London: HMSO. Available from:
<https://www.legislation.gov.uk/ukpga/1976/28/section/1> [Accessed 15 July 2017].

Health (Regulation of Termination of Pregnancy) Act 2018 (No. 31/2018). Dublin, Stationery Office. Available from:
<http://www.irishstatutebook.ie/eli/2018/act/31/enacted/en/print.html> [Accessed 13 February 2020].

Human Fertilisation and Embryology Act 1990 (c.37) London: HMSO. Available from:
<http://www.legislation.gov.uk/ukpga/1990/37/contents> [Accessed 15 July 2017].

Human Fertilisation and Embryology Act 2008 (c.22) London: HMSO. Available from:
<http://www.legislation.gov.uk/ukpga/2008/22/contents> [Accessed 15 July 2017].

Human Rights Act 1998 (c.42). London: HMSO. Available from:
<https://www.legislation.gov.uk/ukpga/1998/42/schedule/1> [Accessed 25 August 2018].

Human Tissue and Embryos (Draft) Bill 2006/7. London: HMSO. Available from:
<https://publications.parliament.uk/pa/jt200607/jtselect/jtembryos/169/169.pdf>
[Accessed 4 September 2019].

Infant Life (Preservation) Act 1929 (c.34). London: HMSO. Available from: <http://www.legislation.gov.uk/ukpga/Geo5/19-20/34/section/1> [Accessed 18 September 2016].

Marriage (Same Sex Couples) Act 2013 (c.30). London: HMSO. Available from: <http://www.legislation.gov.uk/ukpga/2013/30/contents> [Accessed 13 February 2020].

Offences Against the Person Act 1861 (c.100). London: HMSO. Available from: <http://www.legislation.gov.uk/ukpga/Vict/24-25/100/contents> [Accessed 18 September 2016].

STATUTORY INSTRUMENTS

The Human Fertilisation and Embryology (Mitochondrial Donation) Regulations 2015, SI 2015/572. London: HMSO. Available from: <http://www.legislation.gov.uk/ukdsi/2015/9780111125816/contents> [Accessed 31 August 2017].

ABBREVIATIONS

| | |
|--------------|---|
| ART | Assisted reproductive technology. |
| CRISPR-Cas 9 | Clustered regularly interspaced short palindromic repeats (Cas 9 is the enzyme). A method of genome editing that can be used to make germline alterations to DNA to modify faulty genes. Often compared to ‘cutting and pasting’ for its simplicity. |
| EC | Equal consideration – a model of moral status where all who are ascribed it hold it equally. |
| FMS | Full moral status. |
| hESCR | Human embryonic stem cell research. |
| HFEA | Human Fertilisation & Embryology Authority. |
| iPSC | Induced pluripotent stem cell (see below). |
| IVF | In vitro fertilisation. |
| MMS | Multi-criterial, multi-level moral status. |
| MRT | Mitochondrial replacement techniques (a legally permitted form of DNA alteration). |
| MS | Moral status. |
| NR | Natural reproduction. |
| PVS | Persistent vegetative state. |
| SCNT | Somatic cell nuclear transfer (see below). |
| UC | Unequal consideration – a model of moral status where not all bearers are treated equally. |

GLOSSARY

| | |
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| anencephaly | Birth defect in which part or all of an infant’s brain is missing due to a neural tube defect. There is no known treatment and almost all die shortly after birth. |
| blastocyst | A multi-celled organism that forms four days after human fertilisation. It is comprised of about a hundred cells and two cell populations: an external or peripheral layer and a smaller, inner cell mass. |
| consciousness | The state or quality of awareness, or, of being aware of an external object or something within oneself. Thought to occur in the fetus at around 6 months’ gestation. |
| embryo | An individual multicellular organism in the process of forming major parts and organs from early cell divisions. They form at the end of fertilisation and last to the end of the eighth week, after which they are termed the fetus. |
| extrinsic | External factors that are not part of an entity’s essential nature. |
| fertilisation/syngamy | When the sperm penetrates the egg. Over at least 24 hours, the two cells fuse to form a one-cell zygote which contains a unique genome usually comprising 46 chromosomes. |
| fetus | After the end of the eighth week the embryo becomes a fetus following organogenesis, when the major organs and parts of the body form. This term is used until birth. |
| gamete | Term used to refer to either an egg or a spermatozoa. |

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| gastrulation | A key phase of embryonic development around 16 days, starting with the formation of the primitive streak. It is the process that occurs when the cells of the blastula rearrange, migrating inward from the flat embryo into three layers: ectoderm (neural tissue and skin); mesoderm (skeletal and muscle tissues and blood); and endoderm (digestive and respiratory systems). After this, organogenesis occurs when individual organs begin to develop. |
| human embryonic stem cells | Undifferentiated cells formed from the inner cell mass of the blastocyst that have the potential to proliferate indefinitely, and specialise into many different tissue types. |
| hydatidiform mole | A cluster of fluid-filled sacs formed in the uterus by the degeneration of chorionic tissue around an aborting embryo. It is rare, and may be cancerous. |
| implantation | The process of attachment and embedding of the embryo into the lining of the uterus. Occurs around 14 days. |
| individuation/ fission/twinning | Before the primitive streak forms, the embryo may split into monozygotic twins, or occasionally monozygotic or fraternal twins may fuse. This point (around 14 days) marks the initial organisation of a single individual. The process of embryonic cells splitting to form two individuals that occurs in less than 2% of conceptions. The ‘twinning problem’ is how to explain what happens to the original embryo when two are formed, as neither can be identical to their predecessor. |
| induced pluripotent stem cells | These are derived from skin or blood cells that have been reprogrammed back into an embryonic-like pluripotent state. This enables the development of an unlimited source of any type of human cell needed for therapeutic purposes. |
| intrinsic | A characteristic naturally present in an entity, e.g. life |
| in vivo | (Latin) Developing in the uterus. |
| in vitro (fertilisation) | (Latin) In glass, e.g. a petri dish in a laboratory (embryos procreated in a petri dish). |
| pre-sentient | Before the ability to feel or sense pain has developed. |
| primitive streak | A transient, relatively opaque line which marks the direction of what will become the long or head-to-tail axis of the future embryo. Its appearance by the fourteenth day marks individuation and the beginning of organogenesis. |
| sentience | The ability to feel, perceive or experience subjectively, once the neurological pathways and brain activity are sufficiently developed. See Appendix 2 for timing of this development in a fetus. |
| somatic cell nuclear transfer | A technique for therapeutic cloning in which the nucleus of one cell is replaced with the nucleus of another. The nucleus is removed from a healthy egg and becomes the host for a nucleus that is transplanted from a somatic cell e.g. skin cell. The resulting embryo can be used to generate embryonic stem cells with a genetic match to the nucleus donor (therapeutic cloning). UK law demands their destruction at 14 days in humans. |
| spontaneous abortion/miscarriage | The loss and natural death of an embryo/fetus (or infrequently, hydatidiform mole), most usual in the first 12-13 weeks of pregnancy, but may occur up to but not including 24 weeks of pregnancy (after this it is termed stillbirth). |
| stillbirth | The loss of a fetus post-24 weeks, which must be registered in the UK. |

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| syngamy | The process of fusion of two gametes to form a zygote (fertilisation) |
| telos | (Greek) Denoting purpose, end or goal. Aristotle used it in a more specific and subtle sense—the <i>inherent</i> purpose of each thing, the ultimate reason for each thing being the way it is, whether created that way by human beings or nature. |
| totipotent | Capacity of an immature stem cell to differentiate into <i>all</i> extraembryonic, embryonic and adult cell types specialised to form skin, marrow, muscle, for example. |
| zygote | The single cell formed at the end of fertilisation when the two gametes and sets of chromosomes, male and female, merge. |

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INTRODUCTION

*'I am not religious. I do not believe that personhood is conferred upon conception. But I also do not believe that a human embryo is the moral equivalent of a hangnail and deserves no more respect than an appendix.'*¹

1. Moral status: the issue that spawned decades of continuous debate

This thesis investigates how we ought to value and treat human embryos and fetuses during the first half of their pre-natal development, up to the point that they develop the capacity to sense pain. As the quotation in the chapter heading infers, there is a gap between the two dominant views on the moral status of the embryo. Either an embryo has no moral status at all, or they have moral status equivalent to a human adult's, and therefore should not be experimented on or killed. Neither alternative seems to be morally satisfactory.

The debate over the moral status of the human embryo has been ever-present for over fifty years, from the abortion arguments of the 1960s (Noonan 1968) to the birth of the first baby born through *in vitro* fertilisation (IVF), Louise Brown, in 1978 (Step toe and Edwards 1978). Debate was renewed in 1998 when human embryonic stem cells were first derived from embryos (Robertson 1999), opening up the possibilities for a much broader type of research that offers the potential to treat a wide range of degenerative diseases, such as Parkinson's disease, heart disease and various types of cancer. This radically widened stakeholder interest in embryo use, from those interested in reproduction or its avoidance, to anyone who knows someone with a serious illness that might be helped by these pluripotent cells which can be used in regenerative medicine (Devolder 2012, 7). Søren Holm suggested back then that the moral status of the embryo remained

¹ Charles Krauthammer (2009) President Obama and Stem Cells – Science Fiction. *Washington Post*, 13 March.

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unresolved as no new arguments were forthcoming (2002, 497). The rapid recent developments in new technologies that now permit embryos to be kept alive *in vitro* for 13 days (Shahbazi et al. 2016), have made germline gene editing a reality, and brought the pursuit of artificial womb technology much closer. This reveals an urgent need to re-calibrate our moral and ethical obligations (if any) towards the embryo.

Moral status (henceforth MS) is a means of earmarking those entities towards which we believe ourselves to have moral obligations, and it delineates the kind of protection owed. Before 1997, almost all assumed that MS is ascribed based on one necessary and sufficient criterion, but there was no agreement about what that criterion should be. It was viewed as a threshold crossed once that sole criterion was operative: an entity either had MS, and moral agents were obligated to protect innocent life (Congregation for the Doctrine of the Faith (CDF) 1987; Gómez-Lobo 2004a) or it had none (Tooley 1999; Harris 1985a). These assumptions have been challenged: the sole criterion by Mary Anne Warren (1997), threshold moral status by David DeGrazia (2008); and both by James Dwyer (2011).

Despite the heated rhetoric, fuelled by linguistic misunderstandings over terminology and what is meant by terms like “person” or “respect”, finding a middle way that acknowledges the importance of finding a balance between creating new lives, and ameliorating the suffering in current lives seems paramount in ethics. However, even intermediate views, which ascribe MS at some point during gestation, fail to agree on the grounds for ascribing MS to the embryo, or its implications for treatment. The aforementioned quotation is taken from an article in the *Washington Post* by Charles Krauthammer, who holds the view that stem cell research ought only to be carried out on discarded embryos (those surplus to requirements for IVF treatments). He argues that embryos ought not to be created specifically for research, as that violates the categorical imperative not to treat human life as a means rather than as an end in itself (Krauthammer 2009). This reveals an inconsistent attitude where it is acceptable to utilise discarded embryos, but not embryos created specifically for research (Devolder and Harris 2007). Other intermediate arguments also reveal inconsistencies between what is believed and the actions that are considered acceptable, so intermediate views are often dismissed as a compromise (Warnock 1987, 8, 13;

Harris 1999, 300; Devolder 2012, 171 and 2015, 135-152), with each standpoint making concessions to reach an agreement where standards are lower than anyone would desire. The question then becomes whether it is possible to find an ethical and philosophically sound basis for an intermediate view.

My interest in this area was ignited by personal experience. Following a pregnancy ultrasound scan that indicated fetal abnormalities, my partner and I had to make a decision that could have affected the life of my future child. This, together with the experiences of other friends faced with dilemmas caused by life-limiting fetal abnormalities, ignited a desire for further knowledge about the ontological status of an embryo or fetus at any given point in their development. It also raised the question of how they ought to be treated, and what factors determine this. At the heart of every debate about how we ought to treat embryos lies the question of determining their MS, one sidestepped by the Committee of Inquiry into Human Fertilisation and Embryology in its Report into the social, ethical and legal implications raised by assisted reproductive techniques (Department of Health and Social Security (DHSS) and Warnock, 1984). Instead it recommended setting barriers and fixed limits to the permitted conditions and period of use of the embryo *in vitro* (DHSS and Warnock 1984, 2 §5). This provided the basis for the Human Fertilisation and Embryology Act 1990. Although the embryo itself is not regarded as having legal personality (Scott 2002, xxvii-xxviii; Bahadur 2003, 13), this Act sets out parameters for treatment of the human embryo *in vitro*. Of particular relevance to this thesis is the provision that all research projects must be undertaken under licence from the Human Fertilisation & Embryology Authority (HFEA) for specific purposes only (under the provisions of Schedule 2): embryos cannot be permitted to grow *in vitro* for longer than fourteen days ('the 14-day rule') (sections 3(3)(a) and 3(4)), or after the appearance of the primitive streak (the precursor of the backbone). This is the first indicator of neural development which signals the end of the possibility of twinning, and confirms the emergence of an individual arguably continuous with the eventual person.

1.1 Note on terminology

The nuances of the term MS will be fully explored in Chapter Two, and in this work, it is interchangeable with the terms moral standing (Sumner 1981, Beauchamp 1999) and moral considerability (Goodpaster 1978, Warren 1997). MS is usually assumed to be present or absent, but previous philosophers (Little 2008, Dwyer 2011) consider there may be a range, with full moral status (FMS) imposing the most stringent obligations on moral agents.

Human biological development from conception to sentience has several technical terms. For clarity, I use two terms: embryo, to refer to the stages from fertilisation to the end of the eighth week; and fetus, to cover from nine weeks to birth. Use of the term fetus refers here to the period of fetal development before sentience, unless I note otherwise. Sentience is the ability to perceive pain, requiring the development of neural pathways as well as brain activity, which in humans is estimated to occur indeterminately from around 19 weeks (Grossu 2017, 1) to 24-26 weeks' gestation (Royal College of Obstetricians and Gynaecologists 2010, 23; Derbyshire 2006, 910). It remains imprecise because it is difficult to test without invasive procedures that risk causing fetal damage or distress. The focus of this work is on the embryo/fetus *before they reach sentience*, a self-imposed cut-off point selected because there are several robust philosophical defences of sentience as the point at which MS should be ascribed already available in the literature (Sumner 1981; Singer 1993, 57-8; Warren 1997). In order to reflect the liminal status of these entities, who are neither subjects nor objects, I avoid referring to the singular entity as 'it', and choose to use 'they' as a gender-free mark of respect, other than when reflecting other authors' views.

Human embryonic stem cells (hESCs) are of interest to research because, unlike other human cells, they are pluripotent. This means that they can replicate and give rise to any cell type in the body. However, their derivation usually involves the destruction of an embryo (though it is important to note that all embryos donated to research are surplus to their progenitors' reproductive requirements). Techniques for creating human-like embryos that are not the product of a sperm fertilising an egg are proliferating. They include those created using somatic cell nuclear transfer (SCNT) and induced pluripotent stem cells (iPSC) (Devolder 2015, 105-134) (see glossary for details).

1.2 Context

Overall, assisted reproductive technologies bring such welcome benefits that they have gained widespread acceptance – over eight million IVF babies are estimated to have been born to date (ESHRE 2018), and as a side effect this has made their use as laboratory artefacts commonplace. There are three main schools of thought about the MS of the embryo/fetus. The first view, which I term *conceptionist* for its descriptive clarity, considers that from the moment of conception the early embryo should be ascribed FMS. This is based on a belief in the sanctity of human life, whether faith-based (CDF 1987; Schweitzer 2009; Gómez-Lobo 2004b) or secular (Dworkin 1994). The stance that all human life deserves protection is an interpretation of Immanuel Kant’s human dignity formulation of the categorical imperative, implying that embryos ought never to be used as mere means to an end (a view I will contend with in Chapter Two, 2.3.1) (2008, original publication 1785).

The second view is based on *personhood*, which ascribes no MS whatsoever to embryos/fetuses, because they do not possess any of the complex range of psychological qualities that make us persons. The range of criteria forming personhood includes but is not restricted to: having a basic capacity to value your own life (Harris 1999, 303), being self-conscious and a continuing subject of experiences (Tooley 1999, 32); or even being a moral agent (a person capable of taking on reciprocal moral responsibility for others) (Locke 1979, Kant 2008). These views include all animals able to meet these criteria, not just human beings. However, the range excludes fetuses, newborn infants and possibly children from moral protection, and if taken to its logical conclusion, this would morally permit infanticide. Many consider this an unacceptable flaw (Hursthouse 1987, 118).

The third, intermediate view, broadly ascribes MS during gestation. Some consider that a criterion accumulates gradually as the entity develops, others ascribe MS once a particular criterion such as sentience is present. The earliest ascription of MS on this view starts with Don Marquis, who considers that after individuation (when twinning can no longer occur, around 14 days), there is continuous personal identity with the adult it will become, so the embryo has a valuable future like ours (an argument I consider relevant), and should be ascribed FMS (1999; 2007, 61). As

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previously noted, many consider that sentience is a necessary and sufficient criterion to ascribe MS because inflicting pain knowingly on an innocent being without justification causes suffering, and is a serious moral wrong (Sumner 1981; Singer 1993, Warren 1997, DeGrazia 2006). Bonnie Steinbock (1992) plausibly argues for the criterion of “interests”. This holds that the fetus must be capable, on a very basic level, of caring whether it lives or dies because it has a drive, or personal interest in continuing to live, which requires both sentience and consciousness. Jeff McMahan (2002) proposes an ‘embodied mind’ account of consciousness as the point at which a right to life is established. With the exception of Marquis, none of these views consider that the embryo/fetus should be ascribed any MS, though Steinbock considers that they have symbolic value (1992, 41).

Two important variations on the idea of a particular sole criterion denoting a threshold for MS evolved. First is the idea of gradually increasing MS. Warren Quinn suggests that our consideration of the fetus should change with the ‘various dimensions in which the object is affected’ (1984, 54). I agree with Quinn that the sudden ‘existential leap’ (1984, 34) required when an entity moves across the threshold of MS on the acquisition of a single criterion seems implausible. Margaret Little considers that many people believe in a graduated view of embryonic and fetal status, present even at early stages of pregnancy and developing so that ‘its status grows as it does’, until late in pregnancy it deserves very strong moral protection (2008, 332). DeGrazia discusses the idea of MS as a continuum from zero to full, starting with sentience, on the basis that ‘failure to attribute any moral status to sentient nonpersons is a fatal flaw in any moral theory’ (2008, 189). However, he favours the view that all things that have MS deserve equal consideration, which is difficult to align with a concept of increasing degrees of MS, which he later questions (DeGrazia 2012, 139).

A second strand crucial to this work is the idea that MS is based on multiple criteria, first proposed by Warren (1997). Warren brings together the influences of environmental ethicists (Leopold 1949, Callicott 1986), animal rights philosophy (Singer 1993, Regan 1985), and the Ethics of Care (Noddings 1984), which argues that establishing and maintaining relationships is key to moral life (Fox and Moreton 2015, 164). Her resultant theory argues that there are seven principles that aggregate and operate interactively to ascribe MS, rather than one necessary and

sufficient criterion. Furthermore, not all are intrinsic criteria, that is, qualities found within the subject, but instead they depend on relationship. The seven principles are Respect for Life; the Anti-Cruelty Principle (sentience); the Agent's Rights Principle (moral agency); the Human Rights Principle (valuing humans who are not moral agents); the Ecological Principle; the Interspecific Principle (valuing animals living in human proximity); and Transitivity of Respect (respect for the moral beliefs of others) (Warren 1997, 148-172). Warren further argues that morality is based not just on reason but on what triggers empathy in us (1997, 152-3). We do not live in social isolation, so relationships are key to our pleasure and the common good. Thus, relational properties must be key contributors to MS too (Warren 1997, 146-7). This is a view that I find persuasive, and its influence in this work reflects the importance of taking a comprehensive view in considering an entity of value morally. However, Warren's work does not specify how multiple criteria might work together to ascribe MS, whether incrementally or as a threshold to be passed, which I consider a drawback to its practical application.

The idea of MS based on multiple criteria is further developed through Dwyer's theory that children may have higher claim to MS than adult moral agents (2011). Dwyer suggests further criteria may also be relevant to MS, such as potentiality, talents and abilities, beauty, and virtue (2011, 118-130) in addition to four principles overlapping with Warren's: life, relationship, sentience, and higher cognitive functioning. He considers it likely that MS 'is a matter of degree and can therefore give rise to a moral hierarchy' (Dwyer 2011, 59). He controversially suggests that despite equality at the top, there are differentiations in assigning MS even to humans, according to their interests and needs (Dwyer 2011, 11). In reviewing the traits that have been offered as criteria for MS, he suggests that life is scalar, manifesting through energy and activity levels, and how we manifest that can influence relative MS (Dwyer 2011, 70-71). However, "degrees" is suggestive of infinite variation and constant minute increases of MS concurrent with some development. I concur with Carson Strong in rejecting the idea of a sliding scale of MS, because a 32-cell embryo does not have greater moral status than a four-cell embryo (1997a, 458). Strong holds that it is not the continuous physical development as time passes that makes a moral

difference, but the achievement of some developmental milestone that entails an increase in MS (Strong 1997a, 468).

Finally, another influence on this work is that of virtue ethicist Rosalind Hursthouse, who argues, quite correctly in my view, that all positions on the MS of the embryo discussed above are morally problematic (1987, 85), resulting in unacceptable consequences regarding abortion or stem cell research. She argues that the Potentiality View is most plausible, based on the premise that the embryo/fetus is morally unique as a potential person (Hursthouse 1987, 72). However, Hursthouse considers that every view requires extra premises to be consistently held (1987, 85).

2. Finding the gap and making an original contribution

The MS of the embryo is a highly contentious area and an initial review of the extensive literature revealed the depth, complexity and volume of arguments. What I failed to find was any definitive answer to the question I originally set out to discover, how human embryos/fetuses ought to be treated before they reach sentience. Some deontological theories ascribe FMS from conception, which implies that abortion, stem cell therapy and any IVF treatments where not all live embryos are re-implanted are immoral. To treat an entity as under-developed as the embryo/fetus as though they are our moral equal is implausible to many (Tooley 1999; Steinbock 1992; Harris 1985b). Neither zero nor full MS seems to be appropriate for this unique entity. I do not claim to be the first to observe this gap; both DeGrazia (2008) and Rosamund Scott (2002) have implied that further work needs to be done in this area and this thesis will be a contribution towards that work. With the exception of the conceptionist view and Marquis' view (1999) that both ascribe full MS (prohibiting any killing, ruling out abortion, stem cell research and the creation of spare embryos in IVF treatment), the majority of the literature does not consider that the embryo/fetus has any MS until it is sentient.

What emerges from the literature is that despite some support for gradualism, few have examined what *minimal* MS might imply in depth, and little attention has been paid to how MS

might be ascribed or change as they develop from the single-celled zygote to an identifiably human fetus at 24 weeks.

This then formed the focus of this thesis, and my original contribution to the literature. I began by questioning whether it is true that the embryo/fetus has no MS until sentience, which involved an analysis of the concept of MS. The literature is dominated by the assumption that there is one necessary and sufficient criterion that ascribes MS, and that once this criterion is fulfilled, a threshold is crossed and the entity should be ascribed full MS as described above. However, proponents of particular thresholds have suggested that there might be a range within their chosen criterion, whether it is sentience (Sumner 1981, 143-4) or the psychological properties of being a person (Tooley 2012,134). Warren (1997) and Dwyer (2011) developed this further by suggesting that multiple criteria combine to ascribe MS.

I will contend that multi-criterial MS might apply at some stage to the embryo/fetus, with the rapid changes in development that occur from zygote stage to sentience. There has not previously been a concerted effort to explain how and why there ought to be different levels of protection and obligations towards the embryo/fetus at different stages of development. Therefore my original contribution is that I will present a rationale for considering that the embryo/fetus has *some* MS from conception based on combinations of multiple criteria: life, genetic potential, function and relationship. These delimit the way that a virtuous moral agent ought to treat the embryo/fetus. I will present a re-evaluated view of MS based on multiple criteria that increase in levels as criteria strengthen or new criteria aggregate. I consider this overcomes unacceptable consequences.

An alternative view is to have a continuum ranging from moral value (reasons based on extrinsic criteria only) to MS (as suggested by Uí Chonnachtaigh 2012, 41-43), rather than a series of levels ascribing increasing MS. However, I will argue that it is better to maintain one currency, and acknowledge differences through the variation of levels within each criterion. A threshold view of MS is too simplistic as morality is a multi-dimensional metaphysical concept.

This work does not intend to bridge the gap between deontological and utilitarian views, and is not offered as a compromise. Rather, it is a reasoned and consistent moral viewpoint in its own

right. My model is an alternative intermediate view of MS based on multiple criteria, and increasing levels of strength, which creates obligations for moral agents who wish to treat the entity in the right way, appropriate to its MS.

3. Aims, research questions and method

3.1 Aims

The aims of this thesis are to clarify how we ought to treat human embryos and fetuses pre-sentience, and whether their treatment should change over that period due to their rapid development, or due to their intended purpose for research or reproduction. This has implications for the moral permissibility of germline gene editing, the development of artificial womb technology, and whether or not to extend the period during which embryo research ought to be permissible. I set out to search for a middle ground view of MS that would be a closer-to-correct position, and to develop a normative approach that is based on firm, well-reasoned principles that are consistently upheld.

This re-evaluation of MS should provide the basis for how we ought to treat the embryo/fetus, a period of development roughly covering the first 26 weeks of a pregnancy, which has been largely ignored in the literature other than by those who consider human life sacrosanct. I will contend that a multi-criterial, multi-level ascription of MS will provide clear guidelines for how the embryo/fetus ought to be treated. In this thesis I will argue that even the earliest embryo has a minimal MS, which means that there are always some limitations on how they ought to be treated. They should never be treated merely as an object, but nor should they be treated as though they have FMS at this stage: instead there are levels that I will clearly differentiate.

3.2 Research questions

My key question is:

What moral status, if any, ought to be ascribed to the human embryo and fetus?

In order to answer this, several other sub-questions must be answered. First, what is the purpose of MS, and is it the most appropriate concept to use? A conceptual analysis of MS will be conducted

to reveal what MS denotes, how it should be ascribed, and what its function is. MS has been the dominant discourse in determining how to value and treat important entities that can be harmed, but if it is not the most suitable concept available for this entity then other concepts should be used.

Second, must MS be ascribed on the basis of a sole necessary and sufficient criterion? I contend that this traditional concept should be abandoned as too constricting. It fails to guide society on how non-paradigm entities such as human embryos/fetuses ought to be treated because it focuses on only one element, which leads to too many exceptions. A multi-criterial approach will overcome many of the difficulties arising with MS.

A third sub-question arises: are there grounds for ascribing MS to the embryo/fetus? A close examination of the criteria for multi-criterial MS that Warren and Dwyer use reveals that there are certain criteria applicable to this entity, and I argue that other criteria are also pertinent to the MS of this entity. The embryo/fetus cannot be considered in isolation. It is interdependent on its environment and other relational considerations.

Fourth, if MS is multi-criterial, and can be ascribed to the embryo/fetus, which criteria are relevant, and how many criteria are sufficient to ground a minimum MS? This then raises a series of questions about whether every criterion is equal to all others, or whether some contribute greater weight. And if there are levels within criteria, then what justifies the increases in levels? Thus, my final sub-question is, what governs the scope, nature and rules of operation of each range and how does this link with the obligations that are owed by a moral agent at any point? These questions became the basis for the organisation of this work.

3.3 Limitations and challenges

My study is specific to the human embryo from the formation of a zygote to just before the fetus becomes sentient, which on current knowledge occurs around halfway through pregnancy (Grossu 2017, 1). I confine my arguments predominantly to traditionally constructed embryos formed of human ova and spermatozoa, whether the conception takes place *in vitro* or naturally. From the start I excluded the consideration of the MS of animal admixed embryos up to the two-cell stage, as there are more specialised issues there which lie outside the scope of this work, and would

distract from it. The creation of embryos through induced pluripotent stem cells and somatic cell nuclear transfer have been the subject of other studies, as have, more recently, the ethics raised by synthetic human entities with embryo-like features (Stier and Schoene-Seifert 2013; Devolder 2015, 105-134; Aach et al. 2017). Although our treatment of artificially induced embryos is important, it is not currently important for the sake of the entity itself, given that there is no proof that this is the kind of entity that could develop into a person and have a valuable life of their own. Therefore, I have not considered them in this study.

The MS of the embryo can be viewed as an ethical, metaphysical or theological issue, and I wanted to examine the ethical approach because of the widespread practical implications on issues such as stem cell research, abortion and germline gene editing. My initial intention was to identify a normative argument that might reconcile the radically opposed attitudes towards an embryo, whether created for reproduction or research. This was misdirected, because neither approach results in wholly satisfactory outcomes, either prioritising embryonic life above those of current persons, or dismissing their moral relevance. My contribution will be to offer a new way altogether to navigate the issue.

Part of the challenge in writing about the MS of the embryo/fetus is language. MS is a universally applicable principle, but what is communicated by this concept varies between philosophers, let alone its usage by the general public. The term “person” is not interchangeable with human being, the former describing a set of psychological criteria that may not be restricted only to the biological species of the latter. The embryo, too, is a constructed entity (McGuinness 2012). These constructs mean different things to different people. Where possible I will define terms and aim to clarify where confusion lies.

3.4 Analytical approaches and methodology

Within the field of moral philosophy, my methodological approach consists of critical analysis of a representative swathe of the literature, as is the convention in ethics (Salloch et al. 2015). I then review this literature against my criteria for criticism, which are first, whether it leaves a gap in our knowledge about the subject; secondly, whether it contains disputes about the subject; and thirdly,

whether it neglects a particular factor or area that may be significant. I then construct an argument to address my findings about the shortcomings of current interpretations of MS, and defend my theory that MS should be re-evaluated as a multi-criterial, multi-level concept. The necessary conditions are that an entity should have at least two morally relevant criteria at a minimum level to be ascribed a minimum MS.

MS is a metaphysical concept, and I examine the effect of this on how my main question should be answered. In terms of both public understanding, and the work that has been done to enable us to apply this concept outside the paradigm person through multiple criteria and different degrees or levels, MS remains the most appropriate concept to use to denote an entity that moral agents must consider for its own sake (Warren 1997; Strong 1997a; DeGrazia 2008; Dwyer 2011).

The range of views on this subject within moral philosophy cover opposite ends of the spectrum, drawing on different moral theories. The personhood arguments, and many of the intermediate arguments, follow a utilitarian approach, weighing up where the greater moral good lies, and generally concluding that pre-sentient fetuses do not require protection (Harris 1985b). In many cases the strong implication is that no MS should be ascribed until an indeterminate time after birth, leading to accusations that it is over-demanding (Hursthouse 1987, 124). The conceptionist argument is deontological, based on a duty-driven theory (Schweitzer 2009). With its emphasis on equality and FMS for all human beings, whatever the stage of development, the implications are that neither abortion nor human embryonic stem cell research (hESCR) is permitted. This has led to accusations that it is over-inclusive of the human species, and under-inclusive of other animals that may display cognitive and sentient qualities that are far more sophisticated than an average fetus is capable of (Hursthouse 1987). Allegations of speciesism have been levied (Singer 1993). Given the problems that both views demonstrate, it seemed unlikely that a solution could be based within these moral theories. When the rational approaches of deontological and utilitarian theories result in polar opposite recommendations, a fresh new approach is required.

3.5 Theoretical framework: virtue ethics

This thesis is based on a substantive ethical question about the MS of the human embryo, and the dilemmas that arise in application. One theme that emerges through this work is the influence that feelings and moral intuition have on moral decision-making. David Hume asserted that '[t]ruth is disputable, not taste... what each man feels within himself is the standard of sentiment' (1966, s.1), and discussed whether morals are derived from reason or sentiment, concluding that reason alone is not enough. The role of emotion is thus part of the debate around moral theory. Moral philosophy uses appeals to moral intuitions each time a thought experiment is used, prompting an innate reaction not based on considered thought, but 'pre-reflective intuitions' as Tom Regan terms it (2004, 134). These reactions help to build arguments for certain conclusions, so they have been considered foundational. They have even been claimed as the 'data of ethics' when coming from 'thoughtful and well-educated people' (Ross 1930, 41). Yet many reject moral intuitions and the idea of common-sense morality, not least because it is not possible to argue against the way someone feels. As John Harris writes:

... a judgment would be incoherent if the maker of that judgment could not say why it would be better or worse in these and these circumstances. And it is the reasons that are given in support or defence of a moral position that make rational debate about ethics possible (1985b, 5).

Rationality is an important contributor to MS. However, any moral judgment made solely on the facts, and without compassion for the feelings of those that will be affected by it, seems to me to lack balance. Dwyer presents an eclectic account of how our moral minds work when weighing up criteria to ascribe MS, and concludes that 'moral attitudes usually arise initially from nonrational intuitions' (2011, 44-53, at 46). Acting out of duty is actually intuition-driven, he argues, because it results from moral education which involves emotional training. He argues that some of the strongest examples of moral lives, Mother Theresa and Jesus Christ, were motivated by love and compassion rather than reason (Dwyer 2011, 49). It has been noted that those who fail to show emotion are often untrustworthy and abnormal, and that '[f]or centuries moral philosophers

have approached ethical dilemmas by stripping away emotional responses and trying to reason out a solution, but our feelings are fundamental to our human experience.’ (Gardiner 2003, 298). Many of the influences on this work consider that intuitive feelings and common-sense play a valid part along with reason in determining MS (Warren 1997, 75; Strong 1997b, 42; Regan 2004, 133-136; McMahan 2007, 171; Little 2008, 336; Dwyer 2011, 49).

It is the need to strike the balance between rational facts and nonrational intuitions, and between the need for both justice and compassion, that led to a search for a framework of moral theory that would permit consideration of the importance of the whole range of characteristics that make us human. This is not just our ability to reason, but our abilities to feel instinctively, to care for others and form relationships, and to be compassionate to others. In contemplating a re-evaluation of MS applicable to the earliest stages of human life, it became apparent that it is not just the intrinsic qualities of the subject in question that should affect our ascription of MS, but external considerations too, including the facts of the situation, and the character of the moral agent whose thought processes and actions are crucial. Virtue ethics brings together ‘the flexibility to assess each situation individually, searching for action guidance in considering what a characteristically virtuous person would do’ (Gardiner 2003, 300). The virtuous moral agent uses rationality (*phronesis* or practical wisdom), informed by feelings and intuition to make good choices.

Virtue ethics emphasises the virtues or moral character of the moral agents, rather than the consequences of actions or the deontological rules. A virtue is ‘a character trait a human being needs for *eudaimonia*, to flourish or live well’ (Hursthouse 1999, 20). Thus, pursuit of a virtuous aim is to do something that will achieve not merely happiness, but a deep-seated joy, fulfilling one’s purpose in life and the pursuit of well-being. This contrasts with a moral agent fulfilling a duty because it is the right thing to do, even if their attitude is resentful. A frequent criticism of virtue ethics is that in avoiding rules and principles, it fails to provide action guidance like utilitarianism or deontology, an idea Hursthouse rejects as a ‘misconception’:

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[V]irtue ethics can provide a specification of ‘right action’ – as ‘what a virtuous agent would, characteristically, do in the circumstances’ – and such a specification can be regarded as generating a number of moral rules or principles (contrary to the usual claim that virtue ethics does not come up with rules or principles). Each virtue generates an instruction – ‘Do what is honest’, ‘Do what is charitable’; and each vice a prohibition – ‘Do not act, do what is dishonest, uncharitable’ (1999, 17).

However, for some such as Hursthouse, selecting virtue ethics as a framework from which to re-evaluate MS creates a problem. She contends that ‘[p]roponents of virtue ethics have never employed the concept of moral status’ (Hursthouse 2013, 3431) because guidance on how we treat an entity comes from the pursuit of the virtue and vice rules (as above), so the concept is unnecessary (which I will dispute in Chapter Two, 2.3). Hacker-Wright disagrees, and considers that the principle of doing what a virtue calls for, as Hursthouse suggests, fails to ‘offer guidance as to what kinds of entities the virtuous agent should take into account in deciding how to act’ (2007, 449). He offers a view of MS that is based on our conception of the virtues, rather than on a set of intrinsic properties such as life, genetic code or self-awareness. Instead, he considers that it is more important to ask ‘what conception of how to live must they hold, such that this is the course of action that should be pursued in this case?’ (Hacker-Wright 2007, 459).

My approach will be to bring the benefits of virtue ethics and the emphasis on the moral character of the agent to the concept of MS based on particular criteria. Virtue ethics will help in three ways: (1) to justify the use of MS as a concept; (2) to help determine which criteria are relevant for my model; and (3) to act as a guide in particular decision-making scenarios, in terms of how to assess and weigh up the relevant factors. This will bring in situational appreciation, ‘the capacity to recognise, in any particular situation, those features of it that are morally salient’ (Hursthouse and Pettigrove 2018, 1.2). In taking an approach that builds on the shoulders of previous theories, ‘[l]ike any good theory, it will need not to ignore the partial truth of previous theories’ (Baier 1985, 56). Annette Baier argues for the importance of ‘appropriate trust’, which

mediates between reason and feelings, and ‘to recognize a set of obligations is to trust some group of persons to instill them, to demand that they be met’ (1985, 58). Thus, while virtue and aretic values such as excellence, and the pursuit of well-being (*eudaimonia*) is central to this work, I also consider that how we ought to behave can be expressed as moral obligations. As Hursthouse and Pettigrove observe, any plausible normative theory will have something to say about virtues, consequences and rules (2018, §2). The guiding rule is that an action is right if and only if it is what a virtuous agent would characteristically do in the circumstances (Hursthouse 1999, 28). However, not every decision maker will be virtuous, and so this is where criteria, principles and obligations, informed by virtue, help provide moral guidance (Fowers 2015, 3).

There are four virtues that are most applicable to exercise in guiding this discussion about the MS of embryos/fetuses. The first is compassion, by which I mean the capacity to be moved by and sympathetic towards the sufferings of others. This stems from an ability to care for and love others (Gardiner 2003). It helps us to consider another’s welfare and respond empathetically, which is a fundamental human quality, to both the embryo/fetus, with all the possibilities of a valuable future ahead, and to their progenitors. The second, justice, is a concern for fair and reasonable treatment (Beauchamp and Childress 2001, 226). Rather than the legal or political connotations the term often has, here it refers to a personal virtue based in reason, that guides virtuous agents in how to act when balancing difficult considerations. This enables individual justice for both parties, especially when interests conflict, but justice should also be the guide in wider societal questions surrounding public policy, treatment or prevention of morbidities, and the distribution of scarce resources. These two virtues can counterbalance each other so that the reach of compassion can be tempered by the restraints of justice; these will be my focal virtues. They will be complemented by the auxiliary virtues of trust and regret. Trust is a basic cornerstone of any relationship, including professional ones. To know that the person or institution that is responsible for making decisions, creating law, or carrying out research on embryos will do so honestly, reliably and for good societal ends, not to further their own ambitions, is vital in an arena where decisions without precedent have to be made to react to emerging technologies, and the processes through which life is created. Regret is a relevant virtue because it is not always possible to avoid pain when difficult choices

have to be made, though we aim for the correct solution. It is important to acknowledge regret for what might have been, or for the undesirable effects on some involved, and '[v]irtue ethics, because of its focus on the agent rather than the act, encourages moral agents to take account of and express the pain and regret they may experience' (Gardiner 2003, 299).

Virtue ethics will bring a new dimension to and enhance the discussion of MS, because it recognizes the role of emotions as part of moral perception, considers the motivation of the moral agent as crucial, and is flexible so that it encourages creative solutions to difficult dilemmas (Gardiner 2003, 301).

4. Structure of thesis

In this chapter I have introduced the subject of this thesis, outlined its importance to society and summarised the key ideas from the plethora of literature that has gone before. I have delineated the aims of this study, and the methods and moral theory used, along with the limitations and challenges along the way to producing my unique contribution to the area - synthesising multi-criterial, multi-level MS, and relating this to the obligations due to an entity. The remaining chapters are organised as follows:

Chapter One: Prevalent views on human moral status before birth will review the current literature on ascribing MS to the human embryo/fetus, criticising in detail the two theories at polar opposites: the conceptionist view, which ascribes FMS from conception on the basis of the sanctity of human life; then the personhood view, which requires development of a complex set of psychological criteria definitely not present before sentience. Previous intermediate views do not ascribe any MS until sentience (Sumner 1981, Singer 1993, DeGrazia 2006), interests (Feinberg 1984; Steinbock 1992), consciousness (McMahan 2002) or brain birth (Lockwood 2001), all occurring around halfway through pregnancy. The one exception is Marquis, who ascribes MS from individuation (2007), when the embryo is around 14-15 days old. Most ascribe the highest protection of full MS at the relevant point. I will analyse the implications for each view and critique them in order to demonstrate the need for greater flexibility and a new approach.

Chapter Two: Moral status and alternative concepts will argue that although the current concept is flawed due to a lack of precise meaning and requires re-evaluation, it is the most suitable concept to use. An analysis of four alternative concepts in the literature, namely special status (DHSS and Warnock 1984), symbolic value (Steinbock 1992), moral value (Steinbock 2007), and respect (Kant 2008), will fail to yield a more fixed usage or clearer application.

Chapter Three: Multiple criteria, a new model, and ensuing obligations will review the multi-criterial approaches in the literature (Warren 1997, Dwyer 2011), and analyse what we can learn from them in application to the embryo/fetus. This will reveal what drawbacks need to be overcome, such as delineating how many criteria are necessary and how they should be weighted. I will then justify and defend the four criteria relevant to the embryo/fetus in my original new model: life, genetic potential to become a person, function and relationship. I then analyse how a virtuous moral agent ought to behave in relation to these criteria.

Chapter Four: Proposing multi-criterial, multi-level moral status presents a re-evaluation of MS that can be applied to many different entities with vastly differing criteria. I outline how criteria apply, and consider the drawbacks. I propose a concept of MS that starts at fertilisation with a minimal MS based on at least two criteria that accumulate and strengthen as the embryo/fetus develops. I will defend this against possible objections, particularly that of complexity. I contend that it offers an improvement on previous theories applicable to the early embryo, such as the Actual Future Principle (Harman 2003) and Actualisable Potential (Persson and Savulescu 2010), which both fail to give practical guidance on how to treat the embryo while it is still an embryo, only retrospectively.

Chapter Five: Applying MMS to the embryo and the pre-sentient fetus will demonstrate how each criterion strengthens in levels, and how differing criteria should be weighted against each other. I then suggest a way to map the criteria as an embryo develops, or for application to other marginal cases, to compare their relative MS. One strength of this theory is that the obligations owed do not remain constant, but change as appropriate to the entity's needs as it develops throughout its life cycle. I will then discuss the obligations that may be owed to embryos/fetuses at three different stages during this period of rapid development: before individuation, as a late

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embryo, then just before sentience. This model contributes to the field by offering a clear and reasoned argument for ascribing the earliest human embryo a level of MS that does not mandate a prohibition against justified killing, but does value the entity as more than an object.

In *Chapter Six: Practical applications of MMS*, I will examine three research areas where treatment of the embryo/fetus causes ethical dilemmas, to show how MMS helps navigate how we ought to treat this developing entity. First, I consider the implications of extending the 14-day rule which currently legally mandates when embryo research must cease. Second, I analyse arguments that complete ectogenesis (growing the embryo/fetus in an artificial womb environment from fertilisation until “birth”) may be in the best interests of the embryo/fetus. Third, I apply MMS to germline gene editing and consider the welfare of the future person, and the ethical permissibility of enhancing human characteristics for non-medical reasons.

The *Conclusion* will draw together the arguments of each chapter. It will summarise the concept of gradually acquired multi-criterial MS as the logical and most applicable system to communicate to philosophers and non-philosophers alike. I review the main arguments of this thesis, evaluate how this meets the original aims, and make suggestions for further work in this area.

Through linking moral obligations with a multi-criterial, multi-level approach to MS for the embryo/fetus, I will offer an alternative intermediate view that is broadly based on moral principles, justified and interpreted by a virtue ethics framework. This enables MS to be applied consistently, without unfortunate inclusions or exclusions, and enabling the entity to be treated appropriately for the stage of development reached. This may also help us to assess the relative importance of other entities that fall outside traditional guidelines, and facilitate prioritising our obligations within an ethical framework.

CHAPTER ONE: PREVALENT VIEWS ON HUMAN MORAL STATUS BEFORE BIRTH

*'The question of when we originate, or come into being, is conceptually tied to the question of our essence: what are we human persons, most fundamentally?'*²

1.1 Introduction

How we should treat embryos and fetuses depends, as the chapter heading quotation suggests, on when and why human life begins to matter morally, and if it begins to matter instantaneously or gradually. MS is a concept that we ascribe to those who matter morally. Its purpose is normative, to help us make sense of how we ought to treat other entities. This is highlighted in Warren's (1997) subtitle to her work on *Moral Status*, 'obligations to persons and other living things'. She explains what MS means not through any direct definition, but by explaining its effect:

If an entity has moral status, then we may not treat it in just any way we please; we are morally obliged to give weight in our deliberations to its needs, interests, or well-being... because its needs have moral importance in their own right (Warren 1997, 3).

She emphasises a key purpose that MS has in defining the behaviour of moral agents towards status-holders, which I will discuss in Chapter Two (2.3). In this chapter I will examine three interpretations of how, when and why this concept should be applied to human beings.

The first view I examine is conceptionist, a deontological construct that asserts that all human life has a dignity or sanctity, and therefore should be ascribed FMS from conception. The second, the consequentialist view, ascribes MS on particular psychological attributes held by

² David DeGrazia (2006) *Moral Status, Human Identity and Early Embryos: A Critique of the President's Approach*. *Journal of Law, Medicine and Ethics*, 34(1) 50.

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persons, but not by embryos/fetuses. The third is a range of intermediate views, which ascribe MS during gestation either at the onset of a particular criterion, or gradually (Little 2008). Predominantly these views ascribe MS due to a single necessary and sufficient criterion. I will argue that none of these concepts adequately reflect the concept of MS for the full range of entities to which it can be ascribed.

Finding any middle ground based on a sole criterion remains flaw-filled, as will be shown. Although intermediate views attempt to avoid the faults of the absolute positions in being too restrictive about who qualifies (Hursthouse 1987, 178-9), or unfair to other species (Singer 1993), finding a consensus has been likened to hunting for a mythical creature (Charo 1994). This does not rule out the possibility of ever finding a plausible argument regarding how MS ought to be ascribed to the embryo and fetus, however challenging. However, there is no strong logical reason for why MS should be ascribed based on only one necessary and sufficient criterion, and in Chapter Three I will examine challenges to this through the multi-criterial view of MS first introduced by Warren (1997) and developed by Dwyer (2011), who convincingly argue for a more comprehensive approach. The aim of this chapter, however, is to highlight the problems in the arguments of these main views. This establishes the need to find a new way to re-evaluate embryo-fetal MS, and possibly the MS of many other marginal cases.

1.2 The conception view: over-inclusivity

The conception view is based on a belief that human life is special and demands FMS from conception. Thus embryos, the permanently unconscious and anencephalic infants (born with little or no brain, unable to sustain life's most basic functions) are moral equals to a normal human adult, and this has been criticised for being over-inclusive (Warren 1997, 43).

1.2.1 Reverence for life

The most inclusive is Albert Schweitzer's 'reverence for life' ethic, the ideal that every living thing is sacred and should be ascribed FMS, not just human life. Schweitzer argues that humankind has

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an awesome and unlimited responsibility to any living form that has what he terms the “will to live”, a longing for life and pleasure, and a dread of annihilation and pain (2009, 137).

A “will to live” is not a conscious desire, and Warren rightly considers that for this reason Schweitzer is wrong to use the word will, which implies some faculty for conscious thought (Warren 2000, 307). She argues that it cannot apply to an embryo or pre-sentient fetus, which lacks even the basic consciousness (‘instinct, thought, the capacity for divination’) Schweitzer required for such a will (2009, 156). However, Schweitzer contends that this is a universal ethic that must apply to all life forms, requiring us to restrain from their destruction: ‘It says of no instance of life, “This has no value.”’ (Schweitzer 2009, 159). Even insects deserve reverence, he considers. Certainly “teleological drive to live” might have been more accurate than “will”: purpose-driven rather than conscious. As Warren further points out, such drive might also be possessed by non-living organisms like complex computers (1997, 29). Consistently attributing full and equal MS to all living things (which in effect is what his ethic does) would suggest that everyday actions such as cooking, cleaning, brushing your teeth, using antibiotics and thereby killing microbes, or gathering in the harvest are all on a moral par with mass murder (Warren 1997, 37). Warren and Cicovacki rightly argue that ascribing such widespread FMS is pragmatically untenable, pits one life against another very different in form, and would make life intolerable due to constant conflicts and guilt (1997, 34; 2009, 24).

Schweitzer realises that some conflicts are unavoidable; a farmer might mow a meadow because it is necessary to feed his cows, but he should not needlessly pluck a flower head (2009, 144). He acknowledges that there is a difference between necessary and unnecessary killing, but fails to give any guidance on how to differentiate between the two (Schweitzer 2009, 143). He says he could not give a general rule, it depends on context and our moral sense. Whilst logical, there is no systematic analysis of types of conflict, or guidance on relative values that might result in a complete normative ethic. Schweitzer does not forbid animal experimentation *per se*, implying it could be worthwhile, but he places three onerous conditions on workers. Every individual case of experimentation must be necessary, pain must be mitigated, and no researcher must ever ‘quiet any misgivings they feel’ by thinking ‘that their cruel proceedings aim at a valuable result’ (Schweitzer

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2009, 144). His first two criteria are now common in professional ethics within biomedical research, the first also being critical to the ethics and law behind research on embryos. The third forms a robust, though emotionally challenging, conscience guideline for researchers in either profession. This is akin to the virtue ethics approach, which also acknowledges that some situations can never be resolved to the full satisfaction of all parties, making some residual guilt and regret inevitable (Gardiner 2003, 301).

Schweitzer's claim that all life is sacred appeals to all who consider that other animals may also be thinking, feeling beings, but his inclusion of harmful life forms such as insects, bacteria and viruses lacks sufficient justification (Cicovacki 2009, 19; Warren 2000, 307). Schweitzer certainly sets an admirable ideal, but any moral theory needs to be practicable for everyday life, and reverence for life would enlarge humankind's duty of care unfeasibly.

1.2.2 Sanctity of human life

The theistic view of sanctity of life ascribes FMS to the embryo from conception. It is common to many religions, including Hinduism (Bhagavad Gita 9.29), Judaism (Yirmiyahu 1:5), and Jainism, which holds the principle of *ahimsa*, or non-violence (BBC 2009). One philosophically well-developed version is the Christian view as expressed by the Roman Catholic Church in *Donum Vitae* (CDF 1987), written as guidance to the Church after procreative technologies (IVF, pre-natal diagnosis and stem cell research) expanded human interventions. Its title expresses the belief that life is a God-given gift to humankind, and the source of human dignity. As such, life ought not to be in man's control, for this exposes us to new temptations to go beyond the reasonable limits of God-given human dominion (CDF 1987, s.1).

A human being 'must be respected - as a person - from the very first instant of his existence' (CDF 1987, I.1.), thus abortion and infanticide equate to murder. Here, "person" simply means a biological human being from the formation of the zygote (CDF 1987, I.1), though this use of the term causes ambiguity with the psychological interpretation of personhood. *In vitro* embryos share an equal right to life as an adult, and any practice that involves their deliberate death, or the death of embryos 'exploited as disposable "biological material"' (such as embryos created for research,

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which is seen as usurping God's creative role) are condemned, as is induced abortion (CDF 1987, s.I.5). Experimentation on embryos that is not directly therapeutic to them is illicit (CDF 1987, I.4.). Innocent humans have an inviolable, moral right to life which extends from the moment of conception until death (Pope John Paul II 1984, 390). Human pre-eminence is justified in Christian terms: humankind was placed on earth above all other creatures, as stewards who are in control (Genesis 1:26). However, this fails to provide satisfactory justification for such preferential species dominance to non-believers, or explain why all humans have a greater MS than other animals (Singer 1980, 233).

The Catholic Church's viewpoint is often confused with a belief that ensoulment takes place at the moment of conception, although even Catholic theologians have long disagreed on this (Aquinas and Rahner (1972, 236) think it comes later, for example). As Sorcha Uí Chonnachtaigh points out, the argument is more nuanced than this (2012, 21). The Church holds that an embryo has FMS from conception either because they have a soul from conception (which cannot empirically be proven), or on a precautionary principle, because they *probably* have a soul then (Uí Chonnachtaigh 2012, 21), so moral obligation demands their protection because their humanity is undisputed. The Catholic Church's emphasis that an embryo is 'not a potential human being but a human being with potential' (Catholic Bishops' Conference of England and Wales 1980, §12) firmly shows that Catholics ascribe full moral rights from conception. If that potential is prevented from being fulfilled through abortion or research use, then the Church argues this 'is totally opposed to human dignity' (CDF 1987, I.4.). One Catholic philosopher argues that 'it must not be killed, it must not be used, instrumentalised or exploited for any purpose whatsoever' (Iglesias 1990, 63). The argument is valid, if possession of a soul is what differentiates us from other animals and ascribes FMS. However, the premises cannot be proven. McMahan describes the Catholic Church's position as holding that a human being is a human organism informed by a rational soul (McMahan 2007, 184), but argues that at six days' gestation, an embryo lacks any of the physical neurological or brain infrastructure required to reason. They have no capacity for consciousness, and McMahan notes that even Descartes thought a soul had to be continuously conscious (2007,

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15). As Descartes thought the soul was seated in the pineal gland in the brain, it could not predate the brain's existence (Lokhorst 2018, §1).

Alfonso Gómez-Lobo argues that instead, the embryo has the *potential* for rational capacity, which grounds FMS (2005). I agree that the embryo is a potential human being and will contend that this is an important contributory criterion to MS in Chapter Three (3.5.2). However, Gómez-Lobo holds that being human is an absolute term or “proper sortal” in philosophical terms, a threshold term, for one cannot be partially human (2005, 108; Iglesias 1990, 90), whereas I will argue that human development is a phase sortal in Chapter Three, 3.5.2. Gómez-Lobo argues that MS starts at conception because there is active potentiality present in an embryo encoded in their genome which, given the right conditions whether *in vivo* or *in vitro*, will lead to birth (2005, 106). Furthermore, any change in MS would be denoted by a substantial change in physical status, which occurs as gametes merge with the addition of 23 sets of chromosomes. He does not explain why there needs to be a biological marker of some kind to denote a change in the way we value something. There are instances where MS does change without a substantial change in physical status, for example on death the change may not be in substance, but in functionality of the body, yet MS is greatly reduced (if not absent), so the two are not always concomitant.

In Gómez-Lobo's view, a person originates as a single cell zygote and remains a human organism until death (2007, 458). The term ‘organism’ is ambiguous: it may be a material thing that has life, or a self-organising entity that maintains a complex internal structure, even if that is unstable. It can reconfigure and re-assimilate, and might also be part of a larger organism (as a fetus is part of the gestating woman, though with its own DNA). Gómez-Lobo argues that if the early embryo was merely a collection of single-cell organisms loosely stuck together, it would take ‘a biological event of momentous importance’ (2007, 459) to become a single unified organism, and no such development has been identified. This argument is inductively forceful but not necessarily valid. In fact, two embryos can fuse into one (fusion), and one embryo can form twins (fission), so the creation and ending of embryonic lives does happen without momentous fanfare, perhaps because it happens at such an early stage of development.

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However, holding that humans have FMS from conception requires certain assumptions about the continuity of the individual from the zygote onwards. DeGrazia (2007) argues that as all individuals are unique, and twinning can occur up to the 14th day post-fertilisation, we are not individuated before that time. An individual must be indivisible but singular because it is divided from everything else but itself (DeGrazia 2006, 51). A necessary condition of personhood is that the being is an individual (Guenin 2008, 60), though there are exceptions to this in rare cases of conjoined twins, so in my view the individuality argument is over-emphasized, as I will argue in Chapter Three, 3.2. As Gómez-Lobo argues, indivisibility is not a necessary condition for individuality, hosta plants and amoebae are individuals that can divide to form two further individuals (2007, 458). He suggests, reasonably enough, that twinning is akin to this.

However, equating the life of an embryo with a thinking, feeling adult human results in certain anomalies. If the embryo is equally morally important to their pregnant mother, the demands of pregnancy (particularly if resulting from violent acts, or causing serious physical or mental harm to the woman) are very high, and call for self-sacrifice. There are likely to be circumstances where compassion and justice would justify the ending of harm to the woman by aborting the fetus. Furthermore, if embryos are sacrosanct, then when deaths occur naturally through spontaneous abortion (which it does for an estimated 70% of all fertilised embryos),³ then this is a human tragedy. That the embryo should have equal MS is not proven.

1.2.3 Secular sanctity of human life

The secular argument for the conception view is based on the premise that there is no point from zygote formation to adulthood at which we can draw a line and say there is a morally significant change of status or substance (similar to Gómez-Lobo's momentous event, above), therefore tracing back, the fetus must share the same status as adults from conception (Hursthouse 1987, 32-33). Ronald Dworkin (1994) believes that most people consider that human life is sacred to some extent; we have a reverence for its intrinsic value not based on any theistic belief. Thus, he believes

³ See Appendix 1 for pre-natal loss figures

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life ought not to be destroyed: ‘...human life, in any form, has inherent, sacred value, and that whatever choices we have about birth or death should be made, so far as possible, to respect and not dishonor that profound value’ (Dworkin 1994, ix). Stating the claim that human life begins when its biological life begins (Dworkin 1994, 11) fails to recognise the difference between different meanings of life: normative or teleological potential (Yu 2019, 70). Dworkin’s claim fails to justify the exclusive link between human species and MS. Furthermore, in ascribing FMS to the embryo, he claims an uneasy equality between the lives of embryos, 70% of which will never be born, and current people in need of treatment only available through use of embryonic stem cells to survive.

The argument asserts that embryos are human beings, all human beings have equal FMS, therefore embryos have FMS. The first premise is not valid, as embryos are not yet human beings, only ‘human becomings’ (Berg 2007, 22 n.91). The argument that a fetus is human, living, and therefore a human being has been described as a fallacy of affirming the consequent (English 1975, 236). Why being human ascribes FMS is not made clear by the argument’s protagonists, other than on the grounds of religious belief, which is not a belief shared by all in a pluralist society. We ascribe MS to an entity due to its value based on particular attributes. If other species share those attributes to a greater or lesser extent, then a moral agent’s obligations would justly extend MS to them at an appropriate level.

The implications of both sanctity of life views render abortion unacceptable, even to save a woman’s life, or for cases of rape or incest. Euthanasia for the severely impaired fetus with untenable life quality is prohibited. Human embryonic stem cell research (hESCR) is also impermissible, as it usually involves killing the embryos, whether using embryos created specifically for research or ‘spare’ embryos left over from assisted reproductive technologies (ARTs). Green perceptively contends that protecting the life of embryos has its price tag in curbing the freedom of currently existing people (2001, 37). Certainly, it restricts women’s freedom to choose whether or not to continue a pregnancy whatever the circumstances and risks, denies couples unable to conceive the benefits of having their own genetic children, and creates more cases of maternal-fetal conflict. It would also deny society all the potential benefits of medical

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research. This has ramifications for wider society that might otherwise benefit from prevention and treatment of life-limiting conditions and genetic diseases. Conceptionists consider such abnegation worthwhile to protect the FMS of the embryo. Yet embryos donated to research would not otherwise be born, they are surplus to reproductive need, so no lives are “saved”.

In the frequently used Embryo Rescue Case thought experiment (e.g. Liao 2006, 141), when forced to choose whether to rescue a five-year-old child or one or more embryos in a fire, our intuitive choice is the currently existing child. Even if the number of embryos rescued guaranteed at least one live birth, there are other factors that would lead us to choose the child over the embryos without considering the embryo morally worthless. The child is sentient and would suffer harm, plus the child’s relatives would suffer the loss of the child, whereas an embryo is too undeveloped to feel pain, even if they are harmed by the loss of their future life.

While this view might be thought over-inclusive in including the embryo from conception, and ascribing equal MS to all human life, it is simultaneously under-inclusive. It excludes all animals who may possess more morally significant capacities than the embryo (Kuhse & Singer 1985, 123). To limit the privileges of MS solely to humans has been seen as arbitrary discrimination based on species (speciesism) (Singer 1993, 275). Another problem with the conception view is that MS remains constant once present. The attributes of an early embryo and a viable fetus (one sufficiently developed to survive outside the uterus) vary greatly: extending the same obligations to both is unfeasible. The former is pre-sentient, and highly susceptible to spontaneous abortion. I will argue in Chapter Four (4.2.1) that how we ought to treat it becomes more onerous as certain criteria strengthen or aggregate.

The conception argument cannot be consistently upheld, even by its own proponents. Embryos are not treated as moral equals, and we do nothing to prevent their loss through spontaneous abortion, though such a high loss rate should suggest a moral duty to instigate medical research into the causes and prevention of this (Green 2001, 45; Ord 2008, 15).

1.3 The personhood view: over-exclusivity

The polar opposite view ascribes MS only to persons, which signifies all who meet the criterion of holding a certain psychological cognitive capacity, regardless of species (although there is no single agreed definition). The concept of a person is credited to John Locke's work on personal identity. He describes it as a forensic term relevant to actions and belonging only to intelligent moral agents (1979, 346). His qualifying characteristics are:

a thinking intelligent Being, that has reason and reflection, and can consider it self as it self, the same thinking thing in different times and places; which it does only by that consciousness, which is inseparable from thinking... (Locke 1979, orig. pub. 1694, 335-6 §9).

This view excludes all who are not moral agents (that is, able to act on their rational moral instincts) and legal subjects: infants; children; comatose patients; those in a persistent vegetative state (PVS), severely cognitively impaired people and those with dementia. However, it is not species-specific and the term may apply to any animal who holds necessary and sufficient criteria for MS (Regan 1985, 243; Singer 1993, 78). The concept of personhood includes all entities that have a comparable mental life to rational adult humans, and might include intelligent extra-terrestrial life forms or artificial intelligence. Unfortunately, there is no clear-cut agreement from philosophers on which of the many psychological properties discussed in the literature denote personhood. Suggestions range from moral agency (Kant 2008, 22) to self-consciousness (Tooley 1999, 24) or being a creature capable of valuing its own existence (Harris 1999, 307). Doubt has been expressed that the concept can be 'captured in a strait jacket of necessary and/or sufficient conditions' (English 1975, 234).

Personhood, denoting one who is subject to and protected by law, derives from Roman legal rights (DeGrazia 2005, 3; Finnis 2000, 3). It originally excluded some we would now consider paradigm persons, such as slaves and women (Finnis 2000, 4). A person is an individual who matters more than anything else in our environment, and law exists to help protect vulnerable

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persons from violence (Finnis 2000, 1-2). This is why MS and a right to life are so closely associated (DeGrazia 2006, 49), and this, I believe, has led to much confusion. The answer to the question “who has a right to life?” is not the same as “to whom should we ascribe moral status?”. MS confers much wider obligations than a right not to be killed, as I will argue in Chapter Three (3.6), and should not be confused with the legal *right* to life. Birth marks the start of legal protection for humans, though infants and children are not accorded absolutely equal status with competent adults (Berg 2007, 10; Dwyer 2011, 11), because they cannot yet fulfil the role of a moral agent. Children are unable to marry, or enter certain places like nightclubs or betting shops, for example, though this may be for their own protection. This implies that the true threshold for personhood is one that demands a degree of moral agency, as Kant (2008, 22) and Michael Tooley (1999, 23) consider. This may not be identical to when MS should be ascribed, though Hursthouse considers that very few beyond Kant seriously hold this view (1987, 100-102).

1.3.1 Self-consciousness requirement

The criterion of moral agency automatically excludes many humans that most of us consider we have obligations towards, such as infants and children. Tooley instead asserts that the property a thing must have to be a person with a right to life is self-consciousness: ‘the concept of a self as a continuing subject of experiences and other mental states’, believing ‘that it is itself such a continuing entity’, which may include children as persons (Tooley 1999, 24). As neither embryos (nor fetuses) nor infants possess this self-consciousness, therefore they do not have a right to life (Tooley 1999, 26-7). Some adult animals possess this criterion, so they also may be persons. Tooley’s formulation avoids the problem of excluding sleeping or temporarily unconscious people from personhood, because desire to continue existing does not disappear when not consciously thought about (Singer 1993, 98).

Tooley asserts that it is worse to torture a cat for an hour than to kill it, because a cat cannot think of itself as having a future, therefore depriving it of its future does it no harm. This empirically unproven assumption suggests that because they do not have the same brain structure and function as ours, and cannot communicate with us, they have no will to live. Until recently we assumed that

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fish felt no pain because they did not have a sentience system similar to ours: whilst the subject is still under discussion, doubts have been cast (Nordgreen et al, 2009). It seems to me equally immoral to torture or kill a cat deliberately, without significant justification, because you are either harming the cat by causing it pain, or depriving it of its life and teleological purpose when it is empirically impossible to know whether or not this matters to the animal. Its death could be justified if, for example, the costs of caring for the cat would prevent a family being able to eat, but it is hard to envisage any moral justification for torture. Too little is known about the higher mental capacities of a cat to be able to make the judgment that it has none, or that it lacks self-consciousness and a desire to live.

It is not clear how personhood supporters think those it excludes from FMS ought to be treated, including anencephalic infants (born lacking most or all of their brain), severely cognitively impaired children or adults, dementia sufferers or those with PVS. They may not be persons (now) but they are members of a species whose norm is to become persons (Kagan 2016). Without MS, this suggests that they are to be treated either like objects, or like animals, subject to human whims over their treatment, which could be cruel or kind. Tooley does not make clear exactly why being aware of your experiences over a period of time is the main qualifier for moral protection. A murderer may possess this quality yet fail to protect other moral agents. For any species or individual incapable of speech, self-consciousness is hard to prove empirically. Indeed, it implies that an adult human being incapable of communication through speech or writing (perhaps through Locked-In Syndrome) is no longer a person. Such exclusions are concerning to a compassionate moral agent.

1.3.2 Subject-of-a-life criterion

Growing philosophical interest about what makes cruelty to animals morally wrong resulted in sentience becoming an important criterion to prevent suffering regardless of species (Sumner 1981, 113; Singer 1993). Regan's deontological theory of animal rights rests on an assumption that all and only beings who are 'subjects-of-a-life' have FMS, which convey rights to liberty, life, and not to be harmed (2004). Beings are subjects of lives if alive, conscious, and:

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...if they have beliefs and desires; perception, memory, and a sense of the future, including their own future; an emotional life together with feelings of pleasure and pain; preference- and welfare- interests; the ability to initiate action in pursuit of their desires and goals; a psychophysical identity over time; and an individual welfare in the sense that their experiential life fares well or ill for them (Regan 2004, 243).

This is a much more inclusive criterion; most mammals over a year old are capable of this, he suggests. However, as Regan considers this involves more than mere consciousness, embryos/fetuses would certainly be excluded (2004, 243). Subjects do not need to be even potentially capable of rational moral agency though. Being a moral subject justifies protection from being eaten, experimented on or treated in any exploitative way. Regan's argument is that wherever the boundary of consciousness is found, there is the boundary of the right to life (Singer 1980, 245). However, he does not suggest how we test for this level of consciousness, or specify which animals fail to qualify. He insists that being a subject-of-a-life is a threshold (Regan 2004, 245), though Warren warns that sentient animals are not likely to fall into such binary categories. Regan believes that natural objects that are not subjects-of-a-life, such as embryos, may have 'inherent value' (2004, 245) a term Dwyer criticises him for failing to define (2011, 97), other than to distinguish it from intrinsic value (Regan 2004, 235). It does not admit of degrees or else there would have to be some 'basis for determining how much inherent value any given moral agent has', which is open to dangers of arbitrary choices such as sex, wealth or race, or more likely, virtue (Regan 2004, 235-237).

There are many drawbacks with Regan's theory. There are dangers, too, in excluding embryos, fetuses and infants from protection by excluding them from being subjects-of-a-life. There is no explanation of why subjects need to be conscious of a sense of the future: if they have a future then that seems sufficient to warrant moral consideration. There is no clear guidance on when humans develop this criterion. Warren further points out that subjecthood seems to extend to wild animals, which would threaten certain farming practices and demand human intervention in

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the predatory system (1997, 114-5). It also includes animals that are dangerous to humans or their health such as rats and mice. Even those that are against experimentation on rodents would not be keen on sharing accommodation with them (Warren 1997, 116). Peter Singer rightly considers that Regan's reliance on equal rights for all his subjects is the fundamental weakness of his theory, so that animals are equal to humans and there is no differentiation between human beings and rodents (1980, 245). I will return to this discussion in Chapter Two (2.2.3).

1.3.3 Capacity to value one's own existence

Harris contends that '[d]efining "person" as *a creature capable of valuing its own existence*, makes plausible an explanation of the nature of the wrong done to such a being when it is deprived of existence' (Harris 1999, 307, original emphasis). He argues that if you do not now have the capacity to value your existence, then killing you cannot be wrong because it does not deprive you of anything you currently value (Harris 1985b, 19). Those who do not value their own lives through mental or other illness should be free to end them or have others do so at their request (1985b, 17). Yet a symptom of depressive illness is an inability to value one's own life, despite having the capacity to do so, therefore this seems contradictory. Dwyer points out, 'this rationale does not support predicating moral status on just the capacity to value one's own life; it only supports predicating moral status on actually valuing one's own life' (Dwyer 2011, 101). People who recover the ability to value their own life may be glad that they were protected from death by third party valuations. It also fails to allow for future capacity, which will be discussed in Chapter Three (3.5.2).

Though Harris excludes embryos/fetuses from any MS (and his test for capacity, listing 100 things that makes life valuable (1999, 303), suggests this extends long after birth), he does concede that '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' (1985b, 117). Where we differ is that I consider that MS encompasses a range of obligations, not just prohibition of killing.

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A major disadvantage of all personhood views is the lack of agreement among philosophers on which of the many psychological properties discussed in the literature ascribe MS. Tooley argues that it is ‘a series of actual, conscious experiences that are psychologically interconnected’ (2012, 133-134) that is important. No fully agreed and definitive concept of personhood exists. With no agreement on the *paradigm* person, it is no surprise that the status of related entities on the peripheries, where guidelines would be most useful, is in dispute.

There is no plausible argument offered for why only psychological characteristics make a moral difference. Jane English (1975) and Eva Kittay (2005) argue that properties should include the physical, behavioural and social aspects, and I think this is important. Kittay (2005) argues strongly for other elements to be taken into consideration as well as personhood, defending the claims of individuals with severe cognitive disorders to MS. She defends extrinsic qualities as contributors to MS, claiming that social relationships matter, a valid premise I will return to in Chapter Three (3.3.1).

Personhood ignores huge developmental differences: it fails to differentiate between the early embryo, a sentient fetus and a newborn infant: all lack MS under this view, yet there is a vast difference physically, psychologically and in capacity. The early embryo has no brain or form; a sentient fetus can be harmed by pain infliction, and a newborn infant has (albeit limited) consciousness, though not enough to qualify as a subject-of-a-life. I will argue that we ought not to treat all these stages equally. The newly formed zygote, arguably not even an organism at this point, is vastly different from the viable fetus or newborn in so many different ways, yet no significance is given to human development during pregnancy in either the personhood or the conceptionist view (Sumner 1981, 125-6).

Personhood accounts of MS exclude many entities that I consider deserve our moral consideration: newborn infants, children (most personhood accounts fail to declare at what age or stage infants or children might cross the threshold), cognitively impaired people, those in a PVS, those who have ceased to be rational or self-conscious, or where brain damage has limited memory span to minutes. Too many currently fail the threshold.

1.4 Implications of conception and personhood views for embryos/fetuses

As personhood denies any MS to pre-natal life, it is unprotected, meaning that however trivial the reason, abortion is never morally wrong. Morally, it would be an acceptable form of birth control, comparable to having a benign cyst removed. Hursthouse argues with some justification that this has implications for how every pregnancy is treated: society's respect for the developing fetus becomes unwarranted, there would be no morally justifiable punishment for a third party inducing a miscarriage against a woman's will, women who miscarry might be discouraged from expressing their loss (Hursthouse 1987, 51). Though this seems unlikely, failing to ascribe any MS to the developing human being runs counter to a cross-cultural natural instinct to celebrate potential new life as preservation of the species, though with increasing pressure on natural resources, this attitude may be changing.

The logical implication of the personhood argument ascribing MS long after birth is that infanticide becomes morally (though not legally in the UK) permissible. Tooley argues that our intuitive revulsion about infanticide is because it is a taboo; there is no good argument against it, particularly where the individual's quality of life is limited by severe impairments (1999, 22; Kuhse and Singer 1985). However, as Hursthouse points out, most defences of infanticide are argued on the basis of fetal impairment because this is the closest to defensible the argument can get, particularly in Low and Middle Income Countries where options for contraception, abortion or adoption are severely limited (1987, 123). Furthermore, justifying infant killing could permit malpractices such as sex selection, killing to gain an inheritance, or even lead to killing for no justifiable reason, as a means of quietening a crying baby, for example. We tend to assume that infant survival is always the progenitors' choice, but if infanticide was not immoral or illegal, then there is no barrier to third parties killing infants for pleasure (which might be exploited by paedophiles or corrupt governments).

Arguing that there is a case for infanticide or 'after-birth abortion' brought a deluge of public outrage (as reflected by Camosy 2013; Rini 2013; Wrigley 2013) upon the authors Alberto

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Giubilini and Francesca Minerva (2013), proving that whatever the logic of the argument, public acceptance of the practice is unlikely. Giubilini and Minerva did not claim that the fetus or embryo was bereft of *any* status, just that it does not have equal status to actual persons, and that if adoption is not in the best interests of actual people, killing a newborn should be permissible for the same reasons accepted for abortion (2013, 262). They are advocating a form of mercy killing, but unlike euthanasia, the mercy shown is for the family, not the individual involved. However, Giubilini and Minerva argue that this is not killing, only ‘failing to bring a new person into existence’ (2013, 262). This is sophistry: a life form dies; to argue that the life form is not a person may be correct, but is misleading in suggesting that it is morally negligible. However, under the terms of the personhood argument, their argument is valid, but as Anthony Wrigley perceptively observes, ‘questions about moral status are not exhausted by appeal to claims about personhood given that the range of things which are generally ascribed moral status in the world far outstrips the range of things that are ascribed personhood’ (2013, e16). Although infanticide is not wrong when based on the personhood account of MS, I consider that it is wrong and lacks justice and compassion even if an infant is not a person. An infant is sentient, conscious, part of our moral community, and has a valuable future (Hursthouse 1987; Wrigley 2013; Marquis 1999). Failing to protect it may morally breach the duty of care a parent has to their offspring (Kittay 2005), unless in certain circumstances the newborn arrival threatens the survival of currently existing family members under conditions of *extreme* economic deprivation.

A second implication of the personhood view is that there would be no restriction on fetal *or* infant experimentation. Any research on a fetus, whether for trivial or important reasons, becomes morally neutral, and this extends to just before the unspecified point at which an infant/child becomes a person, providing pain relief is given to sentient subjects. Harris worryingly states that the human fetus could be used in painless experimentation right up to birth (1985b, 129). Extending research to include nine-month-old fetuses, premature babies or new-born infants as subjects, is something Hursthouse considers that most people would find unjustifiable, ‘a totally unacceptable consequence’ (1987, 125) of adopting the personhood view.

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The argument offered for using embryos in research is that it may lead to cures for important medical conditions such as heart attacks and Parkinson's disease (Harris 2003, 354), but Hursthouse suggests that even if research led to such a cure, all it would establish is that some research is justifiable. Hursthouse thinks the utilitarian insistence that pain should be prevented in sentient creatures, as it is a moral wrong to cause suffering, reveals a fundamental weakness in the personhood view: it admits that non-persons 'matter' in some way morally (1987, 126-7). Like Tooley's cat, a fetus has a right not to be tortured, but no right to life. It amounts to 'a concession that the person/non-person distinction is too crude a philosophical tool to settle the abortion issue once and for all in the way that was initially envisaged' (Hursthouse 1987, 127). Hursthouse shows that this distinction fails to settle moral issues of abortion (1987, 128) and this extends to hESCR, animal rights, how to treat dementia patients or severely cognitively impaired people (Kittay 2005). It is not merely the destruction of a person that is a serious moral wrong for the entity's own sake, but of non-persons too. Even Tooley questions this assumption, '[i]s it only persons of which this is true?' (Tooley 2012, 132), suggesting personhood might be a sufficient, but not a necessary condition of MS, a view espoused by Wrigley (2013, e15). If someone is a person, FMS should be ascribed, but this does not imply that the converse is true.

English considers both personhood and conceptionist views to be 'clearly mistaken' (1975, 233), and I agree. Her argument is that no single criterion of personhood is necessary and sufficient, and that even if a fetus is not a person it can still be wrong to kill a fetus in some cases:

Non-persons do get some consideration in our moral code, though of course they do not have the same rights as persons have (and in general they do not have moral responsibilities), and though their interests may be overridden by the interests of persons. Still, we cannot just treat them in any way at all (English 1975, 240).

This suggests English favours a more nuanced and less binary view of moral consideration, and though no adequate account existed in 1975, some can now be found in intermediate views (Little 2008; Warren 1997).

1.4.1 Equal consideration of interests

One valuable contribution from the personhood argument is that it brings at least some animals within the moral sphere, those who are capable of conceiving of themselves as a distinct entity existing over time (Singer 1980, 240-44). In the Washoe ape experiment in the US, a chimpanzee was taught to understand 350 signs from American sign language, and use 150. Washoe was able to communicate through signs that the image she could see in the mirror was herself, implying self-consciousness (Singer 1980, 240). Singer follows Jeremy Bentham on the importance of the guideline question, ‘can they suffer?’ (Singer 1993, 57-8), and views sentience as the dividing line between those that have interests, and those that do not. If an entity can suffer, we ought not wilfully to inflict suffering on it, because, ‘[n]o matter what the nature of the being, the principle of equality requires that the suffering be counted equally with the like suffering – in so far as rough comparisons can be made – of any other being’ (Singer 1993, 57).

Singer argues that neither a baby nor a horse should be made to suffer, but if pain is inflicted on both (so that they feel it equally), it is equally wrong to hurt both (1993, 59). However, he argues that other differences between humans and animals, such as increased mental capacities creating memory and fear will lead adult humans to suffer more in the same circumstances (Singer 1993, 59). He claims, ‘[t]he essence of the principle of equal consideration of interests is that we give equal weight in our moral deliberations to the like interests of all those affected by our actions’ (Singer 1993, 21). Singer considers this a firmer basis than ‘Regan's claim that all animals have an equal right to life’ (1980, 247), and that his argument is based on a fundamental moral principle, by which we can treat different beings differently, where their interests vary. However, this requires huge assumptions about the interests of those different from us, which cannot be empirically proven. Dwyer criticises Singer for basing so much on pleasure and pain, which is ‘not all that enters into our first-order practical reasoning’ (Dwyer 2011, 92).

1.5 Compromises? Intermediate views based on a sole criterion

The lack of agreement between the polar opposite personhood and conception views has led to other theories on when we should ascribe MS. These intermediate views have been unfairly criticised as compromise solutions, aiming for wider acceptability rather than being based on principle. Harris particularly considers a gradually increasing MS to be a political compromise (1999, 300), a view I will argue against.

1.5.1 Valuable Futures principle

In 1989 Marquis set out a new argument against abortion (the version I cite is 1999) which, unlike previous arguments, is not based on the subject's intrinsic qualities, biological or psychological. Instead, he asks why killing is wrong. His answer is that what makes killing any living being like us wrong is the loss of all future goods:

The loss of one's life deprives one of all the experiences, activities, projects and enjoyments that would otherwise have constituted your future. Therefore, killing someone is wrong, primarily because the killing inflicts (one of) the greatest possible losses on the victim (Marquis 1999, 49).

If the living being does not have a valuable future like ours to lose, such as human cells in non-reproductive organs, or animals further down the phylogenetic scale, killing may not be wrong. This would certainly exclude anencephalic infants, who will not survive to enjoy a future. It is a necessary condition that the individual will be able to value their future at some point, but they do not have to have the capacity currently, so this includes pre-sentient fetuses, unlike other accounts of MS excepting the conception view (Marquis 1999, 49). He considers a fetus (Marquis' usage covers both embryo and fetus) to be the sort of entity whose life it is seriously wrong to end. This view is plausible until there is a clash with an entity bearing FMS.

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Marquis provides a plausible explanation of how embryos can be harmed, responding to Tooley's argument that an entity cannot possess the right to life unless it has the capacity to desire its continued existence (Tooley 1999, 25), and the argument that an embryo cannot be a victim because it lacks mentation (Bassen 1982). Marquis further considers that the reason plants and the permanently unconscious cannot be victims is not due to the absence of mentation, but because killing them cannot deprive them of a future life like ours (Marquis 1999, 55), "ours" implying being human or close to human, though he is not species-specific (1999, 50). Embryos are harmed by death because they are deprived of a valuable future like ours (Marquis 1999, 55). Mere biological processes are not enough to justify that something has a sake, and deserves protection from harm. Marquis' point is that if it will develop a sake, it ought not to be killed now because an entity like us, whatever its age, can be harmed by deprivation of its future goods.

His original article is not clear about when embryos start to have a valuable future: it seems to suggest that the earlier in the life cycle the killing occurs, the greater amount of life one is deprived of, and the greater the loss, suggesting that embryos are included from the zygote stage. This would rule out all abortion, with possible exceptions such as abortion after rape, or where continuation of the pregnancy threatens a woman's life (Marquis 1999, 46 & 52), and the use of embryos in research or IVF. However, in his 2007 article he clarifies that he considers that there is no continuity of identity until individuation (around fourteen days), when the possibility of twinning has passed. The emphasis on individuality is because personal and numerical identity are thought to be fundamental to our essential existence as persons (DeGrazia 2005, 12-76), and as the early embryo may fission and produce twins up to fourteen days, many hold that there is not yet an individual that can be harmed. From then, a definite individual is continuously identifiable with the person that will be born, and that embryo has a valuable future (Marquis 2007, 65). As all interventions for research and assisted reproduction currently occur in the period before individuation, they are permissible, as are methods of contraception that work to prevent implantation rather than fertilisation, such as the 'morning-after' pill, but abortion remains a moral wrong if it occurs after individuation. Marquis notes that objections to hESCR depend on whether or not we were all once embryos, but he considers that twinning defeats the 'genetically identical

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and spatiotemporally contiguous' theory of development (Marquis 2007, 57). Like DeGrazia (2006, 52), Marquis holds that when the first fission occurs, Zygote A does not have a future of value because A becomes B *and* C, which also split and cease to exist. Before implantation, no individual has been formed yet, because human individuals cannot divide to form twins and both remain identical to their predecessor (Marquis 2007, 63; Smith and Brogaard 2003, 47). The differentiated cells are not yet an individual human organism, but only parts of one. Only after individuation is there an individual to have a future of value, so logically there is nothing at the two-cell stage to which we are identical, on this view. Marquis (2007) and DeGrazia (2005, 12-76) consider that what makes us unique is not present before individuation, a premise I will contend with in Chapter Three (3.2).

One implication is that the greater the length of valuable life to be lost, the greater the loss, so the earlier an entity is in their development, the more valuable they are, which is questionable. It suggests that an embryo/fetus is more harmed by being killed than a 15-year-old, and this is challenged by McMahan, who points out that the opposite seems true (2002, 271). McMahan suggests that Marquis's view presupposes that identity is what matters, whereas his own time relative interest account implies that death becomes a more serious misfortune as an individual's psychological capacities mature and they can comprehend the implications of their own death (2002, 275), a view many of us find more plausible. The strength of harm done depends on the extent to which it matters for the subject's own *current* sake that their life continues (McMahan 2002, 105).

DeGrazia also thinks that Marquis makes a questionable value assumption: that numerical identity is the sole basis for rational prudential concern, suggesting that the evaluation of a fetus's future should assume a whole-lifetime perspective (2006, 55). This means that abortion equates to killing a person, not a potential person, as both deprive individuals of valuable futures. McMahan agrees that Marquis puts too much emphasis on identity, and fails to consider the difference in deprivation caused to the developed fetus by abortion, and killing an adult: '[i]t fails...to take account of the differences in the ways that fetuses and adults are related to their own future selves' (2002, 271). I agree that there is a difference between depriving an adult of life, and depriving a

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fetus. Marquis ascribes FMS to an entity that is barely formed, providing a *prima facie* reason not to kill and yet their chances of a valuable future are still highly tenuous. Common sense views suggest that early abortion is preferable to later abortion, and that killing a baby is more serious than killing an embryo (Hursthouse 1987, 65). There are many good reasons that trump an obligation not to kill, such as a woman's right to bodily integrity. I will argue in Chapter Four that these reasons provide an argument for different levels of MS. DeGrazia considers that the valuable futures argument has merits, but it 'is an oversimplified account of the ethics of killing human beings and ... a more plausible account does not confer a right to life on pre-sentient fetuses' (2006, 55).

The majority of embryos will not have a valuable future due to spontaneous abortion⁴, and while this does not in itself remove any claim to MS (we would not remove MS from a terminal cancer sufferer or soldier on the frontline with high chance of being killed), it does mean that 'three-quarters of humanity is never born' (DeGrazia 2006, 53). If Toby Ord is correct that high natural loss rates of embryos are not a genuine concern (2008, 15), then ascribing FMS is mistaken as this entity is not yet the kind of entity to which such stringent obligations are owed.

Peter McInerney views a fetus as separated from its future by several different possibilities (1990, 267). Only if an embryo develops healthily will they acquire capacities that enable these possibilities to actualise. Because they only have the future *possibility* to develop a valuable future, killing a fetus is not the moral equivalent of killing a person, an argument I find plausible. McInerney rightly highlights huge differences between the future personal life of a fetus versus a person, not least that killing them is not morally equivalent to killing persons (1990, 268).

Marquis has been criticised for failing to explain 'why we should think that their future lives *have value for them* if embryos are not capable of feeling or having desires' (Simmons 2012, 65). McInerney similarly argues that Marquis' valuable futures theory fails on the grounds that no fetus has a mental life comprising feelings or belief, nor the brain or nervous system in which to develop them, the key conduits to a future person (McInerney 1990, 267-8). He considers that there is some

⁴ See Appendix 1 for pre-natal loss figures

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biological continuity, but it does not possess a future personal life in the way a person does. A future includes alternative possibilities (including death) whose actualisation may be affected by action. External factors affect outcomes, and even a paradigm adult does not have more than limited control over what happens (McInerney 1990, 267). McInerney's argument is that a fetus does not have a personal future of which they can be deprived, but I disagree as around 30% of fetuses will become persons and therefore do have valuable futures ahead of them. We may be ascribing MS on a precautionary basis, because we do not know which embryos will survive and which will not, but this is not onerous as MS incurs only very weak obligations at this point.

Marquis' argument has several strengths. It explains how an embryo can be harmed, by deprivation of its valuable future, which provides an important premise for my model in contributing to the criterion of potential to become a person (to be argued in Chapter Three, 3.5.2). Its moral implications do not prevent hESCR up to individuation, or IVF. If a person reaches a point where they no longer have a valuable future, due to terminal illness causing extreme suffering, for example, then killing may not be wrong. However, he does believe it would be wrong to kill someone who temporarily lacks the desire to live, 'the unconscious, the sleeping, those who are tired of life and those who are suicidal' (Marquis 1999, 53), contra Harris. In my view, valuable futures is an important principle, but its application as a sole necessary and sufficient criterion (Marquis 1999, 51) ignores other extenuating factors. Its assumption that a fetus should be ascribed FMS rather than a proportionate level, shares the drawback of the conceptionist view. This is the high price of denying women their bodily integrity by ascribing equal FMS to the embryo, preventing their killing.

Other intermediate views are based on criteria that develop later and are not applicable to the embryo/fetus. However, it is important to understand why these criteria have been selected, because sentience and higher cognitive functions such as consciousness do contribute to an *increase* in MS in my model, to be discussed in Chapter Three (3.5). Therefore I discuss them here as relevant to sole criterion intermediate views, but also as contributory factors to the development of further levels of MS in the later fetus, to be discussed further in Chapter Five.

1.5.2 Sentience

Many philosophers defend sentience as the earliest point at which MS can be ascribed (e.g. Sumner 1981; Singer 1993, 57; Warren 1997, 50-89; DeGrazia 2006, 54). Sentience occurs at around six months' gestation (see Appendix 2 for details), and is the ability to experience pleasure or pain. This grounds a basic foundation for MS because, as Warren argues, it is cruel to inflict pain, suffering or premature death without good cause (1997, 152-156). Not all creatures will perceive harm equally, as Warren notes: 'although it is difficult to prove conclusively, it is likely that sentient organisms differ in their *degree* of sentience' (1997, 155). I agree, as pain thresholds vary from person to person, let alone between species, and development also varies. However, sentience fails to give any clarity to moral agents on when our moral obligations commence because it is difficult to measure, particularly if applied to non-human species. According to DeGrazia, 'sentience is central to a determination of moral status... all and only beings that can have interests can be harmed or benefited in ways that seem (directly) morally important' (2006, 54). While it is undoubtedly important, and a contributory factor to MS, I will argue that it is not necessary as other criteria may ascribe some degree of MS. We would not doubt that persons with congenital insensitivity to pain, unable to feel anything (though having other senses) still have FMS.

DeGrazia considers that sentience is sufficient for FMS, but interestingly, considers that MS is partial before this, suggesting that MS may be ascribed through other criteria and increases gradually (DeGrazia 2006, 54 & 2007, 307). This does not coincide with fertilisation, but from the formation of a coherently functioning organism (2006, 52). He believes 'we are essentially human organisms, so that we exist as long as we are biologically alive and we come into being whenever the human organism does' (DeGrazia 2006, 50). This could not occur before the 16-cell stage, he reasons, and not after individuation (2006, 52). He views life as a gradually evolving process and is tentative as there is some evidence that cell differentiation (when a cell's function begins to specialise) may start as early as the two-cell stage (DeGrazia 2006, 52). DeGrazia's assertion that there are differing developments that affect the MS of the fetus is one I find broadly plausible. I will return to his view in more depth in Chapter Four (4.3), when discussing how multi-criterial MS may operate on different levels.

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L.W. Sumner also acknowledges that nonhuman creatures can be sentient, like Singer (1993), though to different degrees of sentience from us; he extends some moral standing (his preferred term) to all vertebrate animals. He points out that capacity for sentience can only be present when certain physiological structures (of the brain and nervous system) are present. As sentience becomes more sophisticated, consciousness and intelligence open up new ways of experiencing and being affected by the world, denoting a ‘sentience plus’ view (1981, 143). He also considers that an adequate view of moral standing must be ‘gradual, differential, and developmental’ (Sumner 1981, 126). However, in his view non-sentient beings have no moral standing: sentience is Sumner’s threshold for the beginning of gradually increasing MS, whereas for DeGrazia it denotes FMS (2006, 54). If Sumner is correct about the existence of degrees of sentience, and I consider that he is, then even under this one criterion there may be different levels of MS.

Strong agrees that sentience is important to MS, as the basis of moral interests (1997a, 462). He thinks there is one major difficulty with basing MS on sentience – that sentient non-humans, comparable to sentient fetuses, should share a right to life (Strong 1997a, 462). I perceive a second difficulty: the position of non-sentient humans, whether unborn, unconscious or in a PVS. If there is a possibility that conscious life will resume or develop, then we have obligations towards the object of concern. Ascribing FMS to sentient fetuses and all animals who are subjects-of-a-life would mean adult mice, sheep and cattle should be treated equally to adult humans, which is at odds with our moral intuitions (Regan 2004, 239).

There are practical difficulties with sentience as a sole criterion. As Warren comments, ‘if sentience is the criterion of moral status then not even a fly should be killed without some good reason’ (2000, 309). This suggests that the life of a fly should be preferred to that of a fetus. Yet the life of a fetus (if it develops) would in all probability be much longer, more complex and more valuable than the fly’s. Warren suggests that a ‘hypothesis that the moral status of a being is proportional to its degree of sentience helps to explain why it is reasonable to distinguish between the moral status of (for instance) fleas, sparrows, and human beings’ (1997, 87). However, in her

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view sentience is not the only rational consideration for MS. Another difficulty is where in the phylogenetic scale one draws the line: proof of sentience in some species is complex.

Sentience is important because no just and compassionate person wants to inflict suffering on others: if an entity is capable of suffering, they deserve protection *prima facie* from being harmed without good reason. As a necessary and sufficient standalone criterion applied on a threshold, there are too many untenable implications: it includes too many creatures within the protection of FMS, causing everyday moral conflicts. However, levels of sentience, though complex and dependent on to what or whom it is applied, is an important contributor to increasing MS.

1.5.3 Consciousness, brain birth and interests

McMahan considers that we are, essentially, ‘embodied minds’, and that until the organism can generate consciousness, something which occurs between 20-28 weeks’ gestation, ‘only then is there *someone* present rather than merely *something*’ (2002, 267). *Someone* denotes the arrival of a subject rather than an object. Before this stage, he argues that the fetus cannot be “killed”, it is merely prevented from coming into meaningful existence (an argument I refuted in 1.4). In McMahan’s view, before consciousness the fetus is not continuously identical to the person they may become, as they lack psychological continuity with that entity. Consciousness certainly marks an awareness of the outside world, and the beginning of the ability to process neural impulses of pain. However, this generates a high threshold for functional existence that seems to suggest that low-functioning entities such as fetuses are not meaningfully alive. Little is known about fetal or neonatal thought and as again it is a matter of degree, I think we should be wary of putting too much emphasis on this stage of development by ascribing FMS, though again I consider consciousness contributes to an increase in MS. Though the connections have developed, their function is not empirically proven (though nor is it disproven).

In law, death is now frequently equated with brain death, so Michael Lockwood suggests that brain birth should mark the beginning of life. This is when ‘brain structures that are implicated directly in our consciousness’ (Lockwood 2001, 268) begin to function. What distinguishes us from

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other animals morally, what makes us *us*, our essential self, is the ‘me’ that resides in our brains (Lockwood 2001). Lockwood argues it is potential to become a person, plus identity, that is relevant. He cites contemporaneous medical evidence to suggest this happens somewhere between 13 to 26 weeks (Lockwood 2001, 268-9).

Another related intermediate view is Steinbock’s argument for interests as a sole criterion. Based on Joel Feinberg’s legal rights work, she argues that until a human fetus has interests, which requires both a degree of sentience and conscious brain activity, it cannot be ascribed any MS, for ‘all and only beings who have interests have moral status’ (Steinbock 1992, 5). Biological life alone does not convey interests; she holds that a being must be able to have their own beliefs, aims, and goals, for which conscious awareness is both necessary and sufficient. Steinbock considers that ‘[w]ithout interests, it cannot be harmed’ (1992, 6). Embryos may deserve protection due to their symbolic value (1992, 41) (to be discussed in Chapter Two, 2.6). This implies a view of MS that starts with some but not all the elements of protection that MS gives.

However, it is not clear whether Steinbock considers that MS is a threshold, or not. She contends that although interests convey MS, there may be a continuum from sentience onwards (1992, 70). She argues that sentience is ‘sufficient’ to give a being MS (1992, 24), but FMS depends on being able to value themselves: ‘[i]t is this notion of *mattering* that is key to moral status. Beings that have moral status must be capable of caring about what is done to them’ (Steinbock 1992, 5). This implies a continuum *starting* with interests ascribing a lesser MS, to FMS on a capacity similar to Harris’s (1999). It is not clear why bearers of MS must be currently capable of caring what is done to them: someone who is anaesthetised is incapable of caring, but their welfare remains relevant. Harris might argue that the anaesthetised subject currently has the capacity even if it is not being exercised, but I will argue in Chapter Three (3.5.2) that future capacity (as part of an entity’s potential) is relevant to embryonic MS.

Regan notes the ambiguity in the meanings of the word ‘interests’, which may mean that (1) X is in A’s interests, promoting A’s welfare (a welfare interest), or (2) that A is interested in X (an autonomous preference interest, which he agrees only a conscious being could hold) (2004, 87). He argues that beings who cannot form a preference interest may nevertheless have a good or

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welfare of their own, and be capable of being harmed, even without knowing it (Regan 1976, 491). Steinbock argues that Regan confuses something *being* good with having a good (1992, 17). His example of benefiting a car by adding antifreeze is discredited because the car does not have a sake of its own – it does not matter to the car how it is treated (Regan 1976, 494). His error lies in extending interests to objects that will never be capable of caring. I will argue that an embryo/fetus has a welfare interest (or sake of their own) in remaining alive, even if they are currently unable to care what is done to them, because they will have all the goods of a valuable life like ours in front of them.

In arguing against Marquis' valuable future for the embryo, Steinbock considers an infant born with her brain intact, but with the part controlling consciousness damaged (but repairable) so that she cannot feed (Steinbock 1992, 60-61). Given she is not conscious, she cannot have interests, yet Steinbock acknowledges that the answer to whether she should be given treatment is an intuitive yes. This might be due to the parents' interest, but Steinbock admits that it is hard to view an otherwise healthy baby not having a welfare of her own, simply because she is temporarily unconscious. However, she draws a difference between the infant and a zygote, because the infant is 'not merely a potential person', but a baby who should be treated differently because she is so close to having interests (Steinbock 1992, 61). This is interesting because the implication is that, rather than being a firm Harrisian threshold (Harris 1999, 300) where proximity is unimportant, the closer an entity is to the threshold, the greater its MS, a view I share for reasons I will explain in Chapter Four.

An interests-plus account widens the considerations for MS. Rosamund Scott holds that we need to consider the interests of the pregnant woman (2002, 4, 19), because benefiting the fetus may have implications for her. This introduces the idea that the value a fetus has is not purely intrinsic, but may depend on external factors, such as the attitude of the woman towards the fetus. Usually the two interests align, but where there is a conflict, the law usually upholds the woman's autonomy and the fetus has no legal personality (Scott 2002, xxviii). Steinbock, however, draws a distinction between protecting sentient beings for their own sake (or wellbeing) and for other reasons extrinsic to the fetus (for example, parental or societal concerns) (1992, 70). She also

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considers that though pre-sentient fetuses do not have interests *of their own*, they might have future interests and related interests, dependent on relationships (Steinbock 1992, 41, 61). I consider that future interests and relationships both contribute to MS, as I will argue in Chapter Three.

Sentience and higher cognitive functioning (which embraces consciousness, interests and brain birth, all denote the start of psychological activity and are difficult to separate) are certainly important contributors to MS, for only when the brain and neural systems are working interdependently can pain be registered (Parliamentary Office of Science and Technology 1997, 4). These criteria are interrelated, and strengthen reasons to ascribe MS, but I remain unconvinced that any one of these is sufficient as a sole criterion. These theories also do not satisfactorily explain why there should only be one criterion, and why we should fail to have any obligations to entities on other grounds.

1.5.4 Viability and birth

Other intermediate accounts ascribe MS at particular gestational developments. Viability, at around 22-24 weeks (Royal College of Obstetricians and Gynaecologists (RCOG) 2010), is when the fetus's life 'no longer depends on another's *body*' (Scott 2002, 28, original emphasis) and could be sustained medically outside the uterus. It became significant in the United States with the landmark case of *Roe v Wade* (1973) 410 U.S. 113, which ruled that a person may have an abortion until the fetus becomes viable, based on the rights of privacy in the Fourteenth Amendment.

However, merely reaching a developmental milestone at which they might survive and develop outside the uterus is not a *morally* relevant criterion, but depends on medical technology. To ascribe MS to a viable premature fetus in an incubator, and not to one of the same gestation still *in vivo* seems unjust. Hursthouse argues that location can make a moral difference: a kidney donor has no right over that kidney once placed in someone else's body, it is no longer the donor's. However, she does not consider that a change in MS due to viability is equivalent, and I agree (1987, 53). I consider that viability remains implausible as a criterion because the location of the fetus should not *solely* determine our obligations towards them.

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Birth ascribes MS according to Engelhardt (1986), because the infant is an independently existing creature that others can see and feel, and it marks a substantial increase in social role. It enables infants to develop into ‘persons in the strict sense’, that is, having the capacities that we value in persons (Engelhardt 1986, 117). Similar to viability, there is no good reason why there should be a moral difference between two fetuses of the same gestational stage, just because one has been born safely, and the other is still *in vivo*. Certainly we should ascribe FMS by birth at the latest if we are to avoid the infanticide problem discussed earlier, but in my view our obligations begin much earlier.

Hursthouse likens the boundary of MS to the ancient paradox of the Heap of Sand where a grain of sand is added to another, then another, until at some indistinguishable point, a heap forms (1987, 37-8). I will argue that MS builds as criteria strengthen and aggregate, but changes are not so indistinguishable as her heap suggests. While these various criteria might add to an increasing level of MS, none are plausible as a standalone criterion. Indeed, like Charo earlier (1994), I question whether it is possible to find one necessary and sufficient criterion that does not have significant drawbacks. I will suggest in Chapter Three that instead, in order to plug the gaps left by sole criteria and add balance, multiple criteria should be used.

1.6 Summary

In this chapter I have evaluated how MS is ascribed in current literature. Neither absolute view provides a sound and plausible argument that is convincing on all counts. The conceptionist account assumes that sanctity of life ascribes FMS, which excludes animals on the basis of species, and inflicts a high cost to society, preventing abortion and hESCR. However, the personhood view has a range of psychological premises whose validity is disputed, and that exclude too many categories of human life, such as infants, that we intuitively think matter morally. Both views consider that the status ascribed to the embryo/fetus should remain the same throughout gestation: either full or zero MS.

1. PREVALENT VIEWS ON HUMAN MORAL STATUS BEFORE BIRTH

Intermediate arguments based on a necessary and sufficient sole criterion offer additional plausible premises for ascribing MS to fetuses, but again, no uni-criterial view is without drawbacks. I will argue in Chapter Three that we should consider a range of criteria that may be in play rather than focusing on a single one. In aggregate, several criteria make valuable contributions towards a more realistic view of an entity's MS. No uni-criterial viewpoints seem to fit with widespread moral intuitions that as far as human life is concerned, our obligations towards the embryo/fetus are minimal, but increase as they develop. Moral intuition builds a powerful case for suggesting that MS increases as an entity develops, for multiple reasons. The concept seems to me to demand flexibility, both in the strength and types of protection it endows. MS is not restricted to humankind as several philosophers have observed (Callicott 1986; Singer 1993; Regan 2004; DeGrazia 2008), and it appears to be a far more complex and differentiated concept than many traditional views encompass. Drawing a bright line becomes less feasible the wider the circle of consideration becomes, as more variations need to be weighed up.

What is apparent is that all of the arguments presented face challenges, either because the premises are invalid, or the conclusion leads to questionable consequences. This suggests it is important to re-evaluate the concept of MS in more detail, and question the need for a uni-criterial threshold. Above all, in the search for how to value and treat pre-sentient human life, it is vital to consider whether this is the right concept to apply, which forms the subject of the next chapter.

CHAPTER TWO: MORAL STATUS AND ALTERNATIVE CONCEPTS

*'...moral status matters, concretely, because it determines whether and to what extent moral agents, including political and legal decision makers, should give consideration and weight to a being's wishes, interests, or integrity.'*⁵

2.1 Introduction

In Chapter One it became clear that the concept of MS has been subject to multiple interpretations which creates uncertainty regarding what we understand by the term. As Matthew Liao expresses it, '...every plausible account of human moral status comes with a certain "theoretical baggage". That is, each account will face difficult issues particular to it that it must address' (2010, 163). These are that either the premises of the account's argument are invalid, or the conclusion leads to unfortunate consequences, requiring extra work to be done or exceptions to be made. For example, the conception account excludes all other species from MS; under personhood, infants and arguably young children are excluded. In order to establish the normative role of MS, and whether its function as expressed in the chapter heading quotation from Dwyer is applicable to the embryo/fetus, in this chapter I will first examine the meaning and function of MS. I then compare and contrast it with four other concepts commonly used to evaluate treatment of the embryo/fetus: respect, special status, symbolic value, and moral value. A concept is most useful when it is clear and simple enough not to allow any misinterpretation, so to answer my main question of how we ought to treat the embryo/fetus, it is important to select the concept with the least "baggage".

Discussions about MS tend to occur only where there is dispute about whether an entity qualifies or not (Rachels 2004, 165). Arguably the chief challenge with MS, as John Hacker-Wright

⁵ James Dwyer (2011) *Moral Status and Human Life: The Case for Children's Superiority*. New York: Cambridge University Press, 11.

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expresses it in his contention that virtue ethics offers an important critique on the concept, is ‘to determine which entities are owed treatment in accordance with moral norms’ (2007, 449). Values in society are not united, and there is no single determinate account that does not present challenges when applied consistently.

In conducting such a conceptual analysis, as a route to understanding what role the selected concept needs to fulfil in guiding our treatment of the embryo/fetus, I am indebted to Wrigley’s work analysing the concept of vulnerability, and will apply three criteria he uses for good philosophical analysis (2015, 480). These are that the concept: (1) fixes usage so that everything that ought to fall under the meaning of the term will do; (2) is not over-inclusive; and (3) is informed by ‘the ordinary or everyday ‘folk’ understanding of the concept’ (Wrigley 2015, 480). If MS is normative, then there should be an element of the definition that denotes moral obligations and an ethical concern that we need to protect them from harm. He considers that a genuinely substantive concept should consistently account for all cases and play a useful explanatory role (2015, 478).

In 2.2, I analyse the meaning of MS in its various interpretations, which provide good reasons for requiring changes to the concept. In 2.3 I consider the function it needs to fulfil, and address the criticisms that have been made suggesting that MS is a superfluous concept. I argue that, with some re-evaluation, it can play a vital role. I will then compare and contrast four alternatives to MS that are often applied to embryos in 2.4 (respect); 2.5 (special status); 2.6 (symbolic value) and 2.7 (moral value). In 2.8 I assess the concepts and contend that when re-evaluated on a multi-criterial, multi-level basis (as I will propose in Chapter Four), MS remains the clearest that is available to convey to moral agents that certain protections are owed. I then draw some conclusions on why MS remains the preferable concept to use in 2.9.

2.2 The meaning of MS

MS is a metaphysical concept: it does not exist empirically. It has been constructed by society to classify and denote all those entities that, for their own wellbeing, ought to be given some form of

protection so that they may flourish, all other things being equal. As Geoffrey Sayre-McCord explains, ‘metaethics explores... the connection between values, reasons for action, and human motivation, asking how it is that moral standards might provide us with reasons to do or refrain from doing as it demands’ (Sayre-McCord 2014, §1). As such MS is ascribed to something rather than discovered in it, therefore it is subject to differing interpretations, and is difficult to define.

The lack of a single agreed account of what MS is, and to whom or what it applies is problematic. A traditional assumption has been that ascription is due to one necessary and sufficient criterion, despite a lack of agreement on what this might be (Harris 1999; Sumner 1981). Even when the overall criterion is agreed, there may be a lack of consensus within a particular account on precisely what proves its fulfilment; for example, if MS is ascribed on the basis of personhood it could be based on moral agency, self-consciousness, or capacity to value life (Tooley 2012). It is a challenge to know to whom (or what) it applies, and why the chosen parameters are drawn.

The idea that MS should be generally applied, and that all moral agents recognise and act on it draws on Kant’s first formulation of the categorical imperative that states, ‘[a]ct only on that maxim whereby thou canst at the same time will that it should become a universal law’ (Kant 2008, 28). This universalisability clause is supposed to apply to every moral agent, ‘whether human or not’ (Jaworska and Tannenbaum 2018, s.5.5). Kant himself considers that this imperative only applies between rational creatures, and excluded servants, women and children from this category as they were not persons but a type of property “akin to a thing” (Rauscher 2017, s.5). Combining the spirit of Kant’s theories with contemporary knowledge and understanding, a modern interpretation of autonomous rational creatures would include the above, but would still exclude embryos/fetuses. However, a virtuous moral agent is likely to consider that justice demands that whatever concept is selected should be applicable to everything that might be considered of value, to some extent. A virtue ethics approach would not exclude entities from consideration because they are not rational, if there is a moral reason to include them, because justice demands that everything should be treated fairly in the pursuit of what is good and contributes to human flourishing.

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So to what class of entity can MS be ascribed? If the concept is to fix usage, everything that ought to fall under the meaning of the term should be covered. The previous chapter showed that under certain deontological views of MS, it is ascribed only to *Homo sapiens* based on biological species, or the sanctity of life because humans are created in the image of God, including the human embryo/fetus from conception (CDF 1987, s.2). I rejected this uni-criterial view both for its anthropocentrism and because it ascribes FMS from the beginning, demanding equal obligations towards both a rational adult and an embryo. I also rejected the personhood view that requires sophisticated rational and communicative capacities (Lockwood 2001, 267). Putting humans above all others began to be challenged first through the work of environmental ethicists (Leopold 1949; Callicott 1980), then by philosophers working on animal rights (Singer 1980; Regan 2004), which brought fresh perspective to the concept, and confirms that MS is a concept that must evolve. DeGrazia notes that ‘nearly everyone’ agrees our obligations are stronger towards humans than to animals, and we do not seem to have obligations to wild animals or pests (2008, 194), which Singer supports (1993, 107). If they are right, this implies that all who have MS do not have it equally, a view that seems plausible to me.

Dependence on a sole criterion favours simplicity of approach over a thorough review of factors contributing to MS, which I consider a major weakness. The fulfilment of one criterion fails to justify why we should ignore other elements that may contribute to MS, as Dwyer rightly points out:

Proponents of a single-criterion view of moral status would need to explain why other characteristics that generate empathy, a sense of self-worth, or awe are morally irrelevant and only their preferred criterion is relevant, and they have uniformly failed to do so (2011, 60).

The sole criterion view does not consider the entity as a whole, let alone the complexities of the circumstances surrounding it. However, I believe such gaps can be fixed by taking a multi-criterial approach, to be discussed in Chapter Three.

Benjamin Sachs observes that many definitions avoid direct assertions about what MS is, preferring to ‘employ the locution “to have moral status is to [...]” ’ (Sachs 2011, 89). This ambiguously describes what its ascription entitles you to, rather than giving facts about what MS is, implying that MS is something that we can distribute (ascribe, confer, grant, accord), when none of the properties are within our control. DeGrazia’s definition does employ such a locution: ‘To say that X has moral status is to say that (1) moral agents have obligations regarding X, (2) X has interests, and (3) the obligations are based (at least partly) on X’s interests’ (2008, 183). This may be because it is a second order concept rather than an empirical fact, but DeGrazia’s definition is a comprehensive explanation of what MS is despite this, and avoids the suggestions of distribution and control.

Agnieszka Jaworska and Julie Tannenbaum bring further clarity with their definition: ‘[a]n entity has moral status if and only if it or its interests morally matter to some degree for the entity’s own sake, such that it can be wronged’ (2018, §1). Both definitions emphasise that a key purpose of MS is protection, ‘[a] being’s moral status should give every moral agent, whether human or not, reasons to protect that being’ (Jaworska and Tannenbaum 2018, s. 5.5). This succinctly encapsulates several important elements: whether direct harm can be done to the individual, whether the entity has an interest (which I consider may include future existential interest), and whether others should be obliged to treat it in a particular way. The fact that the entity *can* be wronged emphasises that there is reason to care about it morally. If something is in a position to be harmed, then no one motivated by the virtues of compassion or justice could ignore the way that it is treated. Normally, ascribing MS to a class of entities denotes, amongst other things, that all moral agents are obliged to treat them in a particular way that prevents harm being done, for ‘it is common to construe morality as having essentially to do with benefits, harms or with the good of creatures’ (Sumner 1981, 132). The question then becomes whether embryos/fetuses are entities that can be harmed, and if they have sakes of their own, which I address in the next two subsections.

The concept of MS has been flawed by a variety of interpretations based on different moral theories that run counter to each other. The concept can be threshold, MS is either present or absent

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dependent on the presence of a particular criterion that denotes inviolability; proximity to the threshold is not enough. Others consider it to be a range leading up to FMS (Goodpaster 1978, 311). This may be dependent not just on particular criteria but on context and how a morally motivated agent ought to treat an entity. According to Hursthouse, MS in the abortion debate had the possibility of degree and thus hierarchy built into it, but it was reinterpreted as on or off as the argument over its ascription developed (2013, 3422). Harris (1999, 300) and Uí Chonnachtaigh (2012, 19) might argue that this interpretation of MS represents moral considerability, not moral *status*, a term they reserve for the superlative. I prefer the term “status” because it can imply a relative position in a range (Oxford English Dictionary (OED) online, 573).

2.2.1 Can an embryo be harmed?

As we have seen in the definitions above, a key purpose of MS is about protection of entities, so logically it follows that it must be a condition that any entity with MS can be subject to harm. However, there is no clear agreement about what is meant by harm. It has a broad application including: physical injury; material damage; and loss or deprivation of particular goods or benefits, physical, mental or metaphorical, such as the goods or positive enjoyments that life may hold (Marquis 1999). J.S. Mill considers that the only end to which people are warranted to interfere in the liberty of others is to protect themselves from harm (1972, 73). We also have a duty to interpose ‘to protect the defenceless against ill usage’ (Mill 1972, 74). Compassion comprises empathetic responses to those who are ill-used, by deprivation of a future good for example, as with the embryo; a virtuous agent would want to avoid such harm, unless it was justified by enabling others to flourish.

The harm concept again raises the question of whether an entity that does not yet have conscious awareness can be harmed (which would exclude all pre-sentient entities), first discussed in Chapter One, 1.5.1. It has been argued that one must be an ‘existing individual person’ to be harmed (Bayles 1976, 293), a being with the mental capacity to discern good from harm, capable of wanting to avoid pain, which obviously excludes pre-sentient fetuses lacking functioning cognitive or neurological systems (Bassen 1982, 316, 320-321, 326; Steinbock 1992, 14; Tooley

1999, 26; Harris 1999, 304-5; Giubilini and Minerva 2013, 262). However, if life is only valuable because persons are self-conscious beings, aware of themselves over time and able to plan for their future, then those not currently in that state, such as someone with irreversible but not life ending brain damage (or an embryo), would lack all MS. Mentation cannot be a necessary component for harm to be done, otherwise it would be permissible to kill those in a PVS; these patients lack the necessary physical attributes to experience pain, and have lost sentience and interests, so cannot be harmed in this way. Marquis does not consider consciousness a pre-requisite to having rights, and cites *In re Quinlan* (1976) 70 N.J. 10, the US case where a young woman in a PVS was deemed to have rights to privacy despite not being sentient (1999, 48). Whether the fact that she once exercised these rights weighs more heavily than possible future possession of them is pertinent. There is no logical argument that the past is more important than the future: if past capacity counts, then future capacity ought also to be considered, though weighed against its uncertainty. The PVS patient will never regain consciousness, whereas an embryo/fetus *will* probably gain it (and that chance increases the more gestationally developed it becomes). It is not only reasonable to take this into moral consideration, it is important, because a decision now will affect whether that entity has future existence as a person, as I argued in Chapter One with regard to a valuable future, and will return to regarding potential as a criterion in the following chapter (3.5.2).

2.2.2 MS only applies if an entity has a sake of its own

The definitions of MS above (DeGrazia 2008, 183; Jaworska and Tannenbaum 2018, §1) both mention as a key criterion that a qualification for MS is that the entity has interests, which I interpret not as Steinbock's (1992) criterion, but in the broader sense that it has a sake of its own. Since Kant's *The Groundwork of the Metaphysics of Morals* (original publication 1785, the version I cite is 2008), it has been integral to the concept of MS that whatever ascribes MS 'must have the kind of value capable of generating impartial reasons to act for that being's own sake' (Jaworska and Tannenbaum 2014, 244). Jaworska and Tannenbaum clearly state that, in their view, it is the individual's intrinsic capacities and their ends that provide the sole grounds for MS (2014, 245), though it is clear that they consider that the embryo would not qualify. They hold that there are

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many reasons not to harm those too underdeveloped to hold sophisticated cognitive capacities (babies): it would be disrespectful and harmful to their relatives, psychologically harmful to those performing the harmful act, but it is not for the baby's own sake and has nothing to do with their MS (Jaworska and Tannenbaum 2014, 243). However, as I will contend in Chapter Three, I hold that an embryo does have intrinsic value, on the basis that it is alive. An intrinsic value is an essential value an entity naturally possesses in its own right, and traditionally such a being is owed all the obligations of FMS, stringent protection from all interference (Jaworska and Tannenbaum 2018, s.2.1). However, my use of "intrinsic value" infers only that it is an innately possessed value that requires some moral consideration, not the ascription of FMS.

Warren argues that it is important that the obligations are owed directly to the entity itself, and for its own sake, not any third party interests (1997, 10). If we should preserve the life of an embryo, the reason must be because the embryo matters to itself, not merely mattering to its progenitors. As Frances Kamm argues, 'an entity has moral status when, in its own right and *for its own sake*, it can give us reason to do things such as not destroy it or help it' (2007, 229, my emphasis). Its value must not be derived from its utility to others, but from something '*in and for itself*' (Callicott 1986, 140). One cannot ascribe MS to an embryo because their life is important to their future parents, only on the basis that they will become important to the embryo themselves. This brings us back to whether embryos that do not have a current mentation and cannot care, should be ascribed MS on the basis that they have a valuable future in which life will matter to them (Marquis 1999), and I follow Gómez-Lobo (2007) in considering that from the two-cell stage they are essentially living organisms, as discussed in Chapter One (1.5.1), though I consider that this *may* give reason to take the embryo into consideration, not to ascribe FMS equal to persons, for reasons I will establish in Chapter Four.

Sachs considers that Warren (1997) and Kamm (2007) are saying that to have MS is to be *eligible* to have moral properties, a modal notion requiring affirmation of certain possibilities, and this is certainly my line. He argues that the *possibility* that X will have a property is not useful (2011, 95), what is important is what moral properties X actually possesses now. While I agree that such a possibility does not convey a claim to equal treatment, a future-based condition can provide

the basis for special treatment now. Such unknown possibility is the basis for preventative medical treatment, and Bertha Manninen provides a strong argument that future prospects ground current actions in spheres such as health insurance and education (2007, 7). I will return to this discussion in Chapter Three (3.5.2) where I argue that certain types of potential can contribute to MS.

In the traditional sense of the meaning of ‘sake’ - as a current ‘good’, or in X’s interests – an embryo cannot possess one in the way that we normally understand the term. But while embryos/fetuses do not currently have a sake of their own, if they survive they will develop one, unlike some entities that some ascribe MS to, such as Uluru (Warren 1997, 171) or an endangered species (Callicott 1989, 25). Embryos thus have a greater claim to MS than these. David Hershenov and Rose Hershenov argue similarly to Marquis that what is morally relevant is not consciousness, but that a ‘mindless’ (2015, 269) (that is, not conscious) embryo has a future potential to become a valuable person in the normal course of healthy development, therefore it is in their best interests to stay alive. The idea of embryos/fetuses having morally relevant potential determined by their likely normal healthy development into the kind of entity that will have a valuable future is, I will argue, relevant as a contributory factor.

2.2.3 MS includes everything that it ought to

One of the tests of a good concept is that it should include everything that should fall under the meaning of the term, and there is good reason to consider that animals should be included. Singer (1993, 57), DeGrazia (2008, 189) and Regan (2004, 239) argue that animals should be taken into our moral consideration because they are sentient creatures that share many important qualities that we value, though only Regan considers that equality should apply once his criterion is met. As entities with greater capacities than embryos, this inclusion complies with my virtue ethics framework. It would be unjust to exclude animals able to meet certain criteria from ascription of MS purely on the grounds of species, and lack compassion if that involved cruelty to a sentient being. Singer (1993, 61-62) and DeGrazia (2008, 186) both suggest that animals have a lesser MS than persons. Singer (1993, 55-82) is a proponent of equal consideration for entities of equal interests, ‘[t]he essence of the principle of equal consideration of interests is that we give equal

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weight in our moral deliberations to the like interests of all those affected by our actions' (1993, 21). It allows us to treat different beings differently, where their interests are different, so that a being that can conceive of itself over time has greater interests in their life's continuation than one that cannot (Singer 1980, 247). Jaworska and Tannenbaum rightly observe that Singer *implicitly* allows greater moral consideration to self-conscious entities, which seems to espouse a two-tier view to allow animals some consideration, though less than persons (2018, s.5.3). Maintaining equal MS once the concept extends beyond the paradigm person, and includes entities with different characteristics and claims to protection is challenging. A re-evaluated MS with multiple levels might permit that comprehensive flexibility.

2.3 Function of MS

A concept can be normative and, if so, part of its definition should denote moral obligations and responsibilities to prevent harm (Wrigley 2015, 480). I contend that this element is present in the definitions given in 2.2 and in Chapter One (1.1) (DeGrazia 2008; Warren 1997). The concept of MS has been considered either confusing or implausible, distorting rather than guiding our behaviour towards others, to the extent that Horta's article title calls for the concept to be abandoned (Horta 2017, 909). He argues that, worse than failing to give guidance, the use of the concept of MS 'distorts our understanding of how to behave towards different individuals in different circumstances' (2017, 899), not least because it is often used to defend the view that humans have higher status than all others. Others concur that it serves no useful purpose, confuses issues and conveys nothing that cannot be conveyed in other language (Sachs 2011, 99-100; Rachels 2004). Here I will argue that simply showing that there are problems with the existing accounts does not mean that the concept should be omitted from discussion; instead it should be re-evaluated.

It has rightly been argued that the uni-criterial ascription of MS is not sound. The claim that an entity has at least one moral property cannot be employed as a premise in an argument about how it is permissible to treat that entity (Sachs 2011, 89; Hursthouse 1987, 28; Marquis 1999, 47;

Rachels 2004, 170). The argument cannot stand alone (i.e. that an entity is sentient/rational, therefore it should be ascribed MS); it requires additional premises to lead to a conclusion about what moral property that conveys (for example a right not to be killed, or a right not to be coerced) (Hursthouse 1987, 28; Rachels 2004, 170). Any move from a premise to a conclusion asserting MS needs to be tested for soundness, as Sachs considers it infers a moral state of affairs from a non-moral quality (2011, 91). Whether that claim is based on sentience, rationality, or being dependent on another human, what is missing is an intermediate step in inference from a non-moral claim to a moral claim. We need to be cautious about adducing such a thing, because there is the danger of committing a naturalistic fallacy (concluding what ought to be from what is) (Sachs 2011, 97). A virtue ethics framework might provide the missing premise by adding how a virtuous moral agent ought to behave towards one with those properties that would explain an ascription of MS.

However, James Rachels considers that we should drop the concept of moral standing or status, and replace it with a simpler conception: the fact that doing X would cause harm to an entity is reason enough not to do it. There are three elements in play: what is done to the individual, the reason for doing/not doing it (which may cause benefit or harm), and the facts about the individual that explain why they are susceptible to that benefit or harm (2004, 170). Rachels contends that there is something wrong with the way the issue is being framed, and that we get sidetracked by discussions of what we mean by personhood and self-consciousness, but he observes, ‘there is no one characteristic... that is relevant to the whole range of ways in which people (or animals) may be treated’ (1999, 7). He argues that what we should be concentrating on is how we should treat others, rather than trying to pinpoint one particular human characteristic that elevates the bearer to a platform where they get special treatment.

Rachels seems to be advocating replacing the concept of MS with moral obligations. This is a possibility: rather than saying a fetus has MS, and therefore we are obliged to act in a certain way towards them, we could simply state that there are certain obligations owed to a fetus (although there would need to be some definition of what these obligations comprise). However, although it would result in the same treatment of the fetus, the danger would be that the reasons for acting in this way would be lost. Removing an ascription of MS removes the reason for the action, and the

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explanatory role the concept plays. Without the reasoning underpinning obligations, and the framework that MS provides, there is no motivation to adhere to the obligations. Working out why these obligations exist and whether we have more stringent obligations to a pet dog or a sentient fetus could become even more difficult, and people could start developing different moral normatives, thereby losing the consensus, so maintaining MS is preferable.

Sachs contrasts the two methods James Rachels (2004) and Marquis (1999) adopt in reasoning about MS. He considers that Rachels aims to find answers to how we should treat an entity by looking at the characteristics they possess and reasoning about ‘the moral upshot of having those characteristics’ (2011, 87), whereas Marquis’ method is to think about why a wrongdoing is wrong (killing is wrong because it deprives its victim of a valuable future like ours (1999, 49), then draws conclusions about what characteristics an entity must possess (a future filled with experiences and enjoyment) to be wronged in that way. In his view, we either have to use the Rachels method, weighing characteristics and possible wrongdoing, or the Marquis method, thinking about the kinds of wrongdoing, then whether the entity has those characteristics which underwrite the possibility of being wronged that way.

I consider that Rachels has an important point that we need to consider *all* the morally relevant characteristics that an entity possesses in weighing up how they ought to be treated. However, in following this methodology, this creates more of a need for a metaphysical umbrella term or place-holder denoting that there are several characteristics that need to be taken into consideration, and to explain why these characteristics are morally relevant. The function of MS is partly descriptive in that it can be used to denote something about a wide variety of entities that have a sake of their own for many different reasons, and partly normative, in denoting that this entity is something that needs to be carefully considered. Its strength is the flexibility that this offers. If instead we take up Rachels’ suggestion for the embryo, we need to state all the reasons that there may be about the embryo, that they are alive, that they may have the intrinsic or teleological ability to develop into a person, that they were created with the hope of reproducing the species, for example. Then each of those criteria need to have reasons to explain how certain treatments, such as killing or experimenting on them, would be unjust or lack compassion. As DeGrazia expresses

it, it may be possible to do without the term MS, but it provides a ‘convenient shorthand’ (2008, 184).

However, some consider that the ascription of MS fails to prescribe behaviour. Margaret Little (2008, 332) and Hursthouse (1987, 27) both argue that settling the issue of MS does not settle the question of how we should behave towards an entity. Knowledge that an entity has MS does not on its own tell us whether or how we should take that entity into account when deciding *what* to do, it is a moral concept, not a legal one. The concept admittedly does not have the backing of a legal concept that can be enforced by penalties, but the purpose of ascribing MS to an entity is to indicate that there are limits on how moral agents ought to treat an entity. Unless one constrains the definition of the entity very tightly (in which case in my opinion it loses its usefulness by not being inclusive enough) it would be difficult to prescribe behaviour other than in such general terms as MS does: to indicate further consideration. There are too many variables with concepts as complex as these, and a one-size-fits-all approach would not be helpful. However, what is important is that the concept flags that this is not an object, but an entity who matters morally, and to whom obligations exist. It is then up to moral agents to consider what those guidelines should be. Sachs argues that any individual is clear what she means through MS, but definitions that fix usage for all are omitted. He considers that it would be better to use terms like ‘capacity, interest, direct duty, right’, concepts whose meanings have been worked out through normative ethics and ethics of non-marginal cases (Sachs 2011, 99). Unfortunately none of these are applicable to the embryo/fetus, so would not help the aim of this thesis.

To summarise, the problems that arise with the use of the concept of MS would be ameliorated by an account that is not limited by a single criterion defining its own particular moral community, but by wider consideration of all the factors that may contribute to an entity’s MS. Ideally this would fix the usage so that it is neither over-inclusive of entities that are not morally relevant (lacking a welfare of their own), nor under-inclusive of those that are or will be (and could be harmed), and could be applied in a way that avoids unfairly favouring humankind. This should overlap with the everyday ‘folk’ understanding of the term. The role that MS should play is in

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alerting moral agents to find an appropriate way to reflect how we ought to treat an entity, weighing up the relative needs of others competing for similar protection.

Wrigley points out that simply showing that there are problems with existing accounts of a concept does not mean that it should be eliminated, because a more adequate account might yet be provided in the future (2014, 479). Sachs recognises that language is living and also admits the possibility that someone may come up with a way of using MS that is effective in moving forward the debate (Sachs 2011, 91). This work is a contribution towards this. Meanwhile, it is important to consider whether there are other concepts that are applied to the embryo and fetus that might be better able to help to fix usage, explain why the entity is morally important, and explain what obligations moral agents have towards the entity.

Some argue that other concepts better delineate how we should treat and protect embryos and fetuses (Bortolotti 2007, 153-4; Steinbock 1992, 41). If so, then we should use those terms instead and abandon any re-evaluation of MS. In the following sections I will examine four commonly used concepts employed to indicate some moral valuation for the embryo short of MS: respect, special status, symbolic value, and moral value. All denote some sort of middle ground, a reflection of another worth that is greater than zero MS. I will argue that each concept has serious weaknesses as an alternative to MS. There is considerable overlap, and it is difficult to isolate one concept without referencing respect in particular. There is an issue with language here causing potential misunderstanding with the terminology of academic philosophy. Rather than everyday English language *informing* the concepts, which would be helpful, it often confuses the meaning. I shall argue that none are preferable to the concept of MS on the grounds of (1) providing better public understanding of how and why this entity is important, or (2) explaining how we should treat the entity concerned.

2.4 Respect

2.4.1 *Meaning*

This is by far the strongest and most complex of the four alternative concepts examined. It underpins MS, as well as the three other concepts to be discussed. Since it was first asserted that we should act to treat humans as ends in themselves, and never only as a means (Kant 2008, 33), respect has been part of the philosophical discourse on moral considerability (Dillon 2018, §3). Theologians might trace it back to respect for God's gift of life (Callahan 1970, 310-11). Kant argues that only rational autonomous moral agents (persons) are the appropriate objects of the morally significant attitude of respect, and this forms the basis for traditional MS based on what is owed to rational persons:

Beings whose existence depends not on our will but on nature's, have nevertheless, if they are irrational beings, only a relative value as means, and are therefore called things; rational beings, on the contrary, are called persons, because their very nature points them out as ends in themselves, that is as something which must not be used merely as means, and so far therefore restricts freedom of action (and is an object of respect) (Kant 2008, 33).

Embryos are clearly 'things' by this definition, dependent on nature's will. Respect for persons is central to his theory, with the concept of a person as an entity to be treated as more than merely a means. Kant is unlikely to have extended respect to an embryo, because embryos are pre-rational (Devolder 2015, 68). Claims that embryos are not shown respect when used only as means (Gómez-Lobo 2005, Gibson 2007, Deckers 2005, for example) are not supported by Kant's argument. John Robertson also disagrees with anyone who tries to draw support from Kant's imperative, to apply to the creation of embryos for research (1999, 126). He observes that such a deontologic claim makes a wrongful assumption that the preimplantation embryo is already a

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person who can be harmed by being treated as a mere means (Robertson 1999, 126), which grants too much status given its biological development (Robertson 1994, 102).

Respect has been a dominant theme in discussions about moral subjects throughout the twentieth century, and its everyday use is ubiquitous, but its usage is not fixed. There may be more definitions than there are of MS, and a similar lack of consensus over precise meaning. Robin Dillon defines it as ‘a relation between a subject and an object in which the subject responds to the object from a certain perspective in some appropriate way’ (2018, s.1.1). He notes at least ten different kinds of respect. The prevailing voice is Stephen Darwall (1977), who identifies two kinds of respect, recognition and appraisal respect, and according to Dillon, all other types of respect identified can be clustered under these (2018, s.1.2). Of these, only recognition respect, which extends beyond persons, could apply to embryos/fetuses, although Darwall never specifies this. Recognition respect is owed to all persons, but may extend to the law, someone’s feelings or social institutions, if to act otherwise would result in morally wrong actions, for example, in failing to show respect to the dead. Darwall suggests respect has a normative function too:

To respect something is thus to regard it as requiring restrictions on the moral acceptability of actions connected with it. And crucially, it is to regard such a restriction as not incidental, but as arising because of the feature or fact itself (1977, 40).

The idea that respect is extended to something morally considerable to protect it from wrong behaviour has been widely used ever since, and is very similar to the concept of MS: both are ascribed to an entity for its own sake, and both trigger certain obligations or restrictions.

Whether an embryo counts as a feature or fact can be argued both ways, as with ascription of MS. Susanne Gibson questions what relevant feature the embryo possesses that is owed Darwall’s recognition respect (apart from species membership and potential to become a person) (2007, 372) The answer lies in whether there are actions connected with an embryo that would be morally unacceptable, and require restriction. Gibson considers that the language of respect can be

useful in accounting for the seriousness of what is at stake in permitting or refusing embryo research (2007, 377).

Therese Lysaught (2004) argues that the concept of respect has been diminished over the years, and traces three distinct meanings that have emerged. One resulted from the Belmont Report, a 1979 US publication summarising ethical guidance for research on humans, which stated that “respect for persons” incorporates ethical convictions of autonomy and protection of the vulnerable. This substantively includes all human beings (not just autonomous persons), and ‘presupposed an inverse relationship between autonomy and protection’ (Lysaught 2004, 669). Thus the further a person is from being autonomous, the more protection is needed, which infers that respect means a duty to take action. Another came from Tom Beauchamp and James Childress’s (2001, 12) reduction of respect to noninterference (Lysaught 2004, 676), with autonomy becoming the dominant force in principlism in Lysaught’s view. A third came in 1979 when the United States Ethics Advisory Board of the Department of Health, Education and Welfare reduced the concept to an ‘essentially meaningless term’ (Lysaught 2004, 678): ‘profound respect’ (cited in Robertson 1994, 102). The Board further qualifies this term: “respect” does not encompass the full legal and moral rights of persons. Instead the concept appears to have become a continuum: at one end, respect must be accorded to human persons, and further down the scale, some is due to human embryos (less to other animals), but this is not seen as absolute and the benefits of research may outweigh this respect.

2.4.2 Function

In 1984 the Warnock Report claimed that the embryo is owed an added measure of respect beyond that due to other animal subjects (DHSS and Warnock 1984, 62, §11.15), without giving any clear definition of what is meant by this. The aim in using the concept of respect was to denote that there are limits to permissible use of the embryo, but Baroness Warnock herself later derided the terminology as inappropriate:

I regret that in the original report that led up to the 1990 legislation we used words such as "respect for the embryo". That seems to me to lead

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to certain absurdities. You cannot respectfully pour something down the sink, which is the fate of the embryo after it has been used for research (Hansard: House of Lords 2002, column 1327).

The original intention was to denote that embryo use in research should not be undertaken lightly, but controlled by legislation. Sheelagh McGuinness notes that respect has been central to these regulations since the Warnock Report, despite the lack of guidelines on what its meaning is, or how currently permitted activities ‘can be understood as respecting the embryo’ (McGuinness 2012, 68). Jan Deckers, however, considers that the UK government’s position is inconsistent, and argues that though UK law claims to respect the embryo, there is no positive account of what this respect is based on (2005, 259). Others agree there has been a failure to explain what respect means, and how restrictions on its use address what is morally relevant (Lysaught 2004, 667; Pugh 2014, 421-2). In Robertson’s view, respect might entail certain duties, but it does not necessarily confer any idea of protection, even against trivial usage (1995, 38). This again raises the question of whether respect provides any moral parameters.

In contrast, when discussing Mary Warnock’s views that embryo use is only permissible with gamete progenitors’ consent, Harris asks ‘[i]s the principle of respect for wishes more important than that of respect for life?’ (1985a, 73). His implication is that potential lives to be saved through embryo research are more important than overriding the progenitors’ wishes, although the same word is used to express both views. The concept of respect thus varies with the user and the context. Respect can cover many contrasting viewpoints, but it is repeatedly cited as being attributable to entities as a substitute for MS (DHSS and Warnock 1984, 62; Gibson 2007, 376; Dillon 2018, s.3), despite being so multi-faceted, yet it gives no more clarity through either definition or usage.

It has been argued that destruction of embryos shows a failure of respect, and to claim that a law that permits embryo destruction is granting them ‘protection’ is bizarre (McLachlan 2002, 158; similar views are expressed by Callahan 1995; McLachlan 2002; Deckers 2005, 259). Deckers considers that destroying embryos on the basis of lack of qualities fails to show respect, which is

shown instead to those who benefit from the embryo's destruction rather than to the embryos themselves (2005, 260). Daniel Callahan initially welcomed the US Ethics Advisory Board's attempt in 1979 to find a middle ground through asserting 'profound respect' for the embryo which put limits on research, because it also permits early abortions, but it left him with a 'nagging uneasiness' at rationalising the killing of something he profoundly respected (1995, 39). If the US Human Embryo Research Panel's decision to reaffirm respect (National Institutes of Health 1994), yet accept research up to 14 days' development is so decisive, he argues that it should form the bright line for abortion too: he further suggests that it would be more honest not to use the 'rhetoric of respect' (Callahan 1995, 40; also Deckers 2005, 259).

However, Michael Meyer and Lawrence Nelson defend the idea that it is possible to justify destroying something you morally respect (2001). They hold that respect does not mean that the embryo is inviolable (contra Gómez-Lobo 2005, 108); respect is demonstrated through moral consideration about its treatment in both actions (both what is done and what is refrained from) and attitude to the embryo (behaviour which must be consistent with respectful actions) (Meyer and Nelson 2001, 19). They further point out that sometimes something is destroyed *because* it is respected, for example, when a sacred artefact is destroyed to prevent it being profaned (2001, 19). The Japanese practice of *mizuko kuyo* includes spiritual rituals for women as memorial services for aborted fetuses – saying prayers, bringing floral offerings, burning incense, lighting candles, creating wooden plaques called *ema* that carry prayers for and messages to the fetuses, and bowing to a statuary image representing the soul of the dead fetus (Meyer and Nelson 2001, 19). This is akin in virtue ethics to the showing of regret for what might have been (Gardiner 2003).

In my view though, it is only possible to show respect through killing only when it would protect the object from a fate that would cause greater suffering. For example, during wartime, a mother might choose to protect her daughter from multiple rape and torture by killing her before marauding soldiers arrive, an act that is motivated by respect and a compassionate desire to protect her from suffering. However, this does not apply to embryos, which are not destroyed to prevent suffering, as they are far from sentient.

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Similarly, in embryo research, destruction must be for justifiable reasons (Meyer and Nelson 2001). In their view, showing respect might include: ensuring the research goals are legitimate, and can only be achieved using living human embryos; restricting use to the 14 days before the embryo is individuated; not viewing embryos as property, so avoiding buying and selling embryos; demonstrating genuine regret or loss at their destruction; and by using the minimum amount of embryos and disposing of them respectfully (by cremation, perhaps) (Meyer and Nelson 2001, 21-22). Many legislative policies are broadly in line with these aims, including UK laws, though they do not require researchers to demonstrate genuine loss (which would seem rather disingenuous: regret could be faked, and even if sincerely held initially, repetition may cause compassion fatigue). Callahan considers that this argument fails to use good ethical methodology, and views this type of respect as an empty gesture to palliate the uneasy consciences of researchers, it is ‘simply cosmetic ethics to use the language of respect, a sort of “to those we are about to destroy, we salute you” gesture’ (2001, 4). A consistent view ought to forego the concept of respect, and not draw such an early line for research but not for abortion (Callahan 1995, 40).

There is a continuous tension between two moral goals when considering the use of embryos in research: to cure disease, and to protect nascent human life (National Bioethics Advisory Commission (NBAC) 1999, ii). Both are important, and both raise disagreements about what form respect should take and what levels of protection are due, particularly between the diametrically opposed defenders of personhood and conception views. The NBAC considers creation of embryos for reproductive purposes to be ‘respectful in a way that is commensurate with the moral status of embryos’, but that creating an embryo specifically for research only is not (NBAC 1999, 56). This has been interpreted as meaning that respect is shown by opposing the use of embryos created specifically for research. Though this is permitted in the UK, several Western countries including the United States legislate against this, considering that it denies respect for early human life by stopping the reproductive capacity and deliberately permitting an embryo to be created, manipulated and destroyed for utilitarian purposes without regard for their potential interests (Cohen 2001, 5). The argument is that creating embryos solely for research purposes denies them any chance of life, which fails to show respect to embryos. However, if they were not created for

research purposes, they would not be created at all. No embryos used in research would otherwise be reproductive embryos, that is a false premise. Devolder's valid response is to point out that embryos discarded after IVF and used in research are also denied any chance of life, and if not used for research, perish anyway, which is a waste of a valuable resource. She suggests that it would be more respectful to restrict the use of embryos to important scientific research 'that can save and improve many people's lives' (Devolder 2012, 157). If an embryo is to be utilised, there appears to be no moral difference between whether the purpose is to help with procreation or research into human disease: both can be seen as moral goods (Devolder and Harris 2007, 165).

As far as respect is concerned, Devolder points out that one might agree that embryos are instrumentalised in embryo research without disapproving (2005b, 174). The reason so many surplus embryos are produced – more than the number required for IVF - is deliberately to reduce harm to a woman by stimulating egg production, minimising risky egg retrieval procedures (Devolder 2012, 156). The respect, then, is not shown to the embryos, but to the woman. Respect might be achieved by careful research that incorporates substantive values (such as alleviating human suffering), guarantees that embryo potential will not be wasted (that is, that sacrifice of embryonic life serves a worthwhile goal), and that only uses embryos for research if there is no other way to achieve its goal (Devolder 2005a, 369). The Warnock Report (DHSS and Warnock 1984), Steinbock (1992) and NBAC (1999) all support the idea that it is morally permissible to destroy embryos for research into curing disease, but not for use in cosmetic beauty products or for other "frivolous" purposes, yet none of them finely delineate what purposes are acceptable and what are not (if this is even possible without being arbitrary), or link this to the moral value of the embryo. Respect for embryos has generally been shown by putting parameters around their use according to certain principles. However, the term "respect" is interchangeable with MS, and as we shall see, special status and moral value in expressing that there are limits on what ought to be done with the embryo. Whatever the term used, there is an intuitive rejection of certain uses of the embryo.

Devolder (2005a) and Jonathan Pugh (2014, 421) rightly point out that there has been no justification for the claim that destroying embryos for research serving a major health interest

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shows proper moral respect, but destroying them for other types of research does not. The idea that respect is manifested not by protecting an entity's life, but by placing limitations on its use is one that Pugh critically analyses, questioning whether moral respect really is 'validation for placing moral constraints on the treatment of human embryos,' (Pugh 2014, 421). Pugh also asks how you draw a non-arbitrary line between research there are moral reasons to pursue and those for prudential reasons (Pugh 2014, 422). He makes some suggestions for responses but does not offer a full reply, a stance he justifies by saying his point is to show that invoking the concept of moral respect skips over lots of philosophical ground (Pugh 2014, 424). In his view, to justify moral respect to the embryo, supporters need to describe what feature of the embryo is morally relevant (e.g. species) and why, and then they need to explain why certain research use fails to acknowledge that feature's moral relevance, thereby violating the moral respect the embryo is due (Pugh 2014, 423). Again, the similarities with criticisms levelled at the concept of MS are striking. Pugh's main point is to show that the concept of moral respect is a shaky ground to build on, it is an 'ambiguous concept' (2014, 422) because there is no adequate account of what respect is or why embryos deserve it. He suggests that 'affording proper moral respect to an entity involves setting constraints upon an action that honour[s] or safeguard[s] something that is judged to be morally relevant about the entity in question' (Pugh 2014, 422). This is not something currently available in the literature.

There seems no more consensus or clarity on how an embryo ought to be treated when respect is the concept applied instead of MS. Understanding of the concept of respect is clouded by the many meanings it bears, and the division between the two main contenders: Kantian "respect for persons" which forbids their use merely as a means (which, as I pointed out earlier, is not logically extended to the embryo), and Darwallian "recognition respect", which does prescribe certain sorts of acceptable behaviour. Arguably neither apply to the embryo.

Similar criticisms to those about MS are levied at the concept of respect. Both lack an agreed definition that is in widespread use. Both have been used by philosophers to defend opinions at the opposite ends of the spectrum, leading to confusion about its use and application. There have been attempts made under both concepts to explain how we should treat the entity under consideration, and while these actions have merit, both concepts underpinning them are very similar.

Where the major difference lies is that the general intuitive or “folk” understanding of “respect” in application to the embryo fails to inform the concept, and causes confusion. In everyday language, respect means esteem or deferential regard for a person or thing (OED online, 732-734). The idea of respecting an embryo by treating a few cells *in vitro*, which cannot be distinguished from many other types of cell by the average person, as important and deserving of deferential treatment seems as foolish as Warnock suggests (2002).

2.5 Special status

2.5.1 Meaning

This term seems to have emerged from the Warnock Report, which states that while the human embryo does not share the same status as a living child or adult, it ought to have:

a *special status* and... no one should undertake research on human embryos the purposes of which could be achieved by the use of other animals or in some other way. The status of the embryo is a matter of fundamental principle which should be enshrined in legislation (DHSS and Warnock 1984, 63, §11:17, my emphasis).

Protection in law in the form of limits to the avoidable use of human embryos was achieved through the Human Fertilisation and Embryology Act 1990, which resulted from this report. This set up the Human Fertilisation and Embryology Authority (HFEA) to regulate licensing of clinics and implement the terms of the Act, thereby gaining the onerous task of discerning which purposes are important enough to warrant embryo destruction. However, the Committee failed to define what “special status” meant, and gave no explanation of why the human embryo is special or should be afforded legal protection. It indicates an assumption that human embryos are of greater importance than other animals without explaining what it is about human life that makes it so unique. Special status was intended to entail that research embryos should be used only for important purposes, not ‘frivolous’ ones (DHSS and Warnock 1984, 64), and so that research,

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handling and transportation are strictly controlled and monitored only under licence, as per the recommendations of the Report.

2.5.2 Function

The function of the concept of special status was to provide legal restrictions on embryo usage. The Report distinguishes between *in vivo* and *in vitro* embryos, and considers that *in vivo* embryos and fetuses are already adequately protected in law. Although they have no legal status or right to life, the Offences Against the Person Act 1861; The Infant Life (Preservation) Act 1929 (for a fetus sufficiently developed to be capable of being born alive); the Abortion Act 1967; and the Congenital Disabilities (Civil Liability) Act 1976 all provide some measure of protection for the *in vivo* embryo/fetus, which the Committee considered adequate (DHSS and Warnock 1984, 63 §11.16). These broadly protect the developing entity except in certain circumstances when the pregnant woman may, with the agreement of two doctors, wish to terminate the pregnancy for a permitted reason (Abortion Act 1967, s.1(1)(a)-(d)).

The more contentious issue for the Committee was how to recommend that embryos should be treated in the laboratory, a relatively new development that no government had legislated for at that time. The majority of the Warnock Committee held that research on human embryos was essential to advance medical knowledge, ‘subject to stringent controls and monitoring’ (DHSS and Warnock 1984, 64 §11.18). Thus, in effect, “special status” clearly did not mean protection against killing *in vitro* although the implication is that, except when there is a clash of maternal-fetal interests, it does for embryos *in vivo*. With its underlying utilitarian influence, the greater good was deemed to be served by the five original purposes legally permitted for research by the Act. These are: enabling infertile couples to have children genetically related to them, researching new treatments for infertility, increasing knowledge about congenital disease, investigating causes of miscarriage and developing more effective contraception techniques, and detecting genetic or chromosomal abnormalities before transplantation (Human Fertilisation and Embryology Act 1990, schedule 2 s.3(2)(a)-(e)). At that time, the possibilities for ameliorating or curing life-threatening diseases through hESCR and therapy still lay in the future, and were not legislated for

until three additional purposes for research were added to the 2008 amendment to the Act (schedule 2).

No embryo used for research can be implanted into a woman for further development, gamete donors are required to give written informed consent to the use of the embryos for research, and all clinics undertaking such work must be licensed by the HFEA, to which they must prove that their research could not be carried out using anything other than human embryos, to prevent gratuitous loss of embryo life (Human Fertilisation and Embryology Act 1990, sch.2 (6)). Effectively, this restricts some uses of human embryos due to their special status, but enables embryos to be used for research and assisted reproduction.

Supporters of special status argue that usage is fixed by the legal backing for the limitations the concept imposes (Hansard 2002, 4.4; House of Commons Science and Technology Committee 2005, §49), but the concept of special status also remains undefined, like respect (Jones 2011, 70). It clearly meant different things for different members of the Warnock Committee, given the three dissenters who were against permitting embryo research, and thought special status was due to 'its potential for development to a stage at which everyone would accord it the status of a human person' (DHSS and Warnock 1984, 90). Indeed, the grounds for asserting it have never been clarified. Confusion perhaps arose because the majority of Warnock Committee members, who did not hold either of the absolutist positions, were aware that some members of society did, and attempted to accommodate that. Margaret Brazier (1999) claims that the laws governing embryo use in Britain are permissive, and notes that in other European countries embryo use for commercial or industrial purposes and trade is banned. She contends that you cannot consider that they have a special status but continue to permit their use as laboratory artefacts: if instead they are young humans, protection is inadequate (Brazier 1999, 187). She thinks English legislation 'is muddled about embryos no doubt because the society it represents is muddled too' (Brazier 1999, 188). The division between those who consider that the embryo is already a new human being, and those who see it merely as cells is so deep that no concept will unite them.

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Entities created by both sperm and eggs are essentially the same, whether *in vitro*⁶ or *in vivo*, yet the legislation applied to them is governed by their intended function in life, which seems hard to justify without further discussion. This is a point I will return to in Chapter Four. So how is it possible to justify the concept of “special status” to embryos treated completely differently under law, dependent on location? *In vitro* embryos are clearly granted a different, higher status from any other human tissue or organs through the Human Fertilisation and Embryology Act 1990 and its 2008 amendment. There are restrictive laws in place governing what they are used for and how this is monitored. The 2008 Amendment brought in wider uses for increasing knowledge about and developing treatments for serious disease or medical conditions (Human Fertilisation and Embryology Act 2008, schedule 2 3A(2)(a)-(c)). There is an ever-growing list of conditions covered, which, as well as increasing knowledge about embryo development, may have increased the demand for embryos created specifically for research only. However, the results that are beginning to be seen in treatment for macular degeneration (Wannan and Derbyshire 2016), stroke recovery rates (Knapton 2016) and other conditions (Bodkin 2017) are viewed as adequate justification and thought to be the tip of the iceberg of possibilities (Harris 2016a; Starr 2017 at 9’36”). Thus under a utilitarian view, the good outweighs the loss in terms of embryos destroyed, in that a greater number of people are likely to benefit. However, whether the concept itself has any strength beyond its legal backing is doubtful.

Special status could be seen as a nod to a gradualist view: it denotes that whilst the entity does not have the same moral value as an autonomous person, it is special (because it is human), though no justification for why this should be has been proffered. Once again, the parameters of the discussion are fixed by whether or not an embryo should be treated equally to a person. There is no clear definition of the concept, despite the legislation it allegedly underpins, which in its failure to prevent the embryo becoming a trade object does not convey much that is ‘special’. It does not provide better understanding of how and why the embryo is important, though it does specify when and how it can be used for non-reproductive means. Again, the concept is not one

⁶ If created by both sperm and egg and not via iPSC or other methods

readily understood by an intelligent person in the street. If asked what is meant by the special status of a human embryo, I predict few would be able to answer. Had the phrase been deleted from the Report (or had another concept been used), it would not have made any difference in practical terms. It is unlikely to pass the test of being widely understood in common usage.

2.6 Symbolic value

2.6.1 Meaning

The concept of symbolic value denotes public commitment to a powerful symbol of human life, despite not being an entity with any intrinsic value in its own right because it lacks interests (Steinbock 1992, 167; Robertson 1994, 102; 1999, 117). In Steinbock's view, they should not be treated as 'a mere commodity or convenient tool for research', provided this does not clash with the interests of sentient beings (Steinbock 1992, 167). Steinbock argues that there ought to be parameters set, governing what can be done to embryos, and this term conveys a certain protection owed to embryos short of FMS that 'precludes using them in unnecessary experiments or for purely commercial gain' (Steinbock 1992, 41). It can be argued that this protection has already been extended to *in vitro* embryos through UK law since 1990, and therefore in practical terms the concept of symbolic value adds nothing to "special status".

Robertson considers that the creation of embryos solely for research (permitted under UK but not US law, Human Fertilisation and Embryology Act 1990, schedule 2 s.3(2)(a)-(e)) could be demeaning, as many view this as solely instrumentalising human life and giving no due to 'its inherent sanctity', despite the fact he considers that no harm is done (1995, 37). Yet the symbolic cost may be justified, he argues, if the purposes for the research are to produce important new medical knowledge (Robertson 1995, 38). He considers that the embryo should be given some kind of intermediate 'status' which justifies giving research embryos greater 'respect' than other human tissue, 'because of its potential to become a person and the symbolic meaning it carries for many people' (Robertson 1994, 102). In one short paragraph he uses three concepts interchangeably, and

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perhaps this speaks volumes: none of these concepts is sufficient by itself. Robertson also contrasts symbolic value with MS, and acknowledges that symbolic meanings do not make moral claims on us. Symbolic meanings are highly subjective, their meanings are so personal and variable, that subordinating symbols to research goals usually violates no moral duties (Robertson 1995, 37-8).

2.6.2 Function

Robertson suggests that ‘how we treat this stage of a “developing human life” thus *reflects and even defines the value that we place on human life generally*’ (1995, 37, my emphasis). This introduces an interesting idea, that the way society treats an embryo denotes its degree of civilisation. This is important: the ideal of protection for the weak and voiceless in any society has long been a measure of its worth (DHSS and Warnock 1984, 3). But if we assume that an embryo lacks any intrinsic value and is merely a symbol of human life, a precursor to the thing itself, and we treat this symbol as though it were worthless, the implication is that we think the human life it symbolises is worthless too.

However, the concept of symbolic value brings a certain discrepancy. If a laboratory embryo ought to be treated more carefully than a transplant organ due to their symbolic value, then should every symbol of human life be treated differently too? Lisa Bortolotti and John Harris point out that the ankh hieroglyph, the Hebrew number 18 and the lotus are also symbols of human life in other cultures (2006, 24), though they only represent a single aspect. All have symbolic value, though only the embryo is alive. They consider that there is no logical link between the premise of symbolic value and the conclusion that the embryo ought to be treated differently because of this (Bortolotti and Harris 2006, 24). In their view, all lack intrinsic value, and unless this is a morally considerable being (such as the human embryo), there is no need for parameters to be put on its use on the basis of symbolic value. As I consider that the embryo is a life form with intrinsic value, I find this inadequate.

A symbol such as a cross or Star of David can usually be bought and sold, indeed its commercial value is part of its *raison d’être*. Yet commercialisation is exactly the kind of ‘frivolous’ usage Steinbock aims to prevent by her claim that an embryo has symbolic value (1992,

7). The sale of embryos and their use in making art or jewellery, as Bortolotti and Harris point out, has already occurred (2006, 30), contravening the limitations desired by the concept's proponents. However, they argue that there is no logic for limitations on their use from the argument for symbolic value. The compulsory destruction of *in vitro* embryos after 14 days does not follow from such a claim. Destroying a symbol to show that it has value seems *prima facie* like a contradiction.

Bortolotti and Harris (2006) consider the appeal to symbolic value to be both redundant and misleading, and make a powerful argument against it for three main reasons. First, it fails to add anything to other sources of value the embryo has in its own right, which is a key failure of this concept: the embryo lacks interests but is still owed indirect moral consideration (due to the feelings of others towards it). Secondly, embryos are symbols with only derivative value, they are not scarce and lack sentience (therefore, in Bortolotti and Harris's view, any intrinsic value); their only value lies in potential, an argument they consider flawed. Symbolic value is not a real value, because it depends not on the value of the symbol itself but on what it represents (Bortolotti and Harris 2006, 25-26). Thirdly, they also doubt that symbolic value tracks moral value, and suggest that the moral valuation is better seen in terms of a conflict of interests where the subject is morally considerable, such as embryos.

One ought not to treat something with symbolic value as if it is the thing it symbolises, and there is no need to protect a symbol, such as a flag, unless it has a value in its own right (Bortolotti and Harris 2006, 28-9). This though ignores the role of symbolism: to represent intangible ideals. They conclude that symbolic value is either a sentimental idea - influencing our emotional reactions in making ethical decisions - or plays on potential, an argument they consider lacks merit (a point I will dispute in Chapter Three, 3.5.2).

Symbolic value is evoked to communicate the values of society, but as seen above, this does not universalise the value it holds. Rather than clarifying the issues, ascribing symbolic value seems to complicate them by (1) considering embryos to be representative of human life, not actual human life, and (2) linking the term with the concept of respect – it does not appear to be meaningful on its own, but '[i]f embryos are taken to be symbols of the life of persons, they are to be accorded respectful treatment' (Bortolotti and Harris 2006, 25). Steinbock combines both too, 'very early

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embryos may be a potent symbol of human life, and thus deserving of respect' (1992, 7), demonstrating that symbolic value needs to draw on the concept of respect to create its own meaning. On the first point, symbolic value does not offer any protection *per se*. Bortolotti and Harris observe the lack of protection that symbolic value has for most symbols, such as doves, fish, or lambs (2006, 23).

A major problem with the concept of symbolic value is that it gives no clarity about how an entity ought to be treated. It is only the first premise in an argument, similar to Sachs' and Hursthouse's criticism of MS. Symbolic value must be married with the concept of respect or moral value, to denote that because X has symbolic value, it ought to be esteemed on the basis of respect or value to justify why it should be treated in a particular way. Bortolotti and Harris point out that there is a leap of logic between the belief that persons have MS and should be treated with respect, and that whatever symbolises the life of persons (i.e. the embryo) acquires moral value, and '[n]o convincing account of the moral significance of symbolic value has been provided so far' (2005, 74).

Asserting symbolic value does not offer new grounds for morally considering an embryo, and it lacks precise definition and justification. Bortolotti agrees that either we consider that embryos have intrinsic value and work out our moral obligations towards them, or if we concede that they only have symbolic value, this will be subordinate to any entity with intrinsic value. Symbolic value will always be trumped in clashes with other values (Bortolotti 2007, 154), though as I will argue, it is often appropriate for those with higher status to have their interests preferred, so this alone is not a disadvantage for the concept.

Symbolic value is usually accorded to something on the basis of what it represents, a purely extrinsic valuation. A symbol is normally the visible manifestation of a concept or object, such as a badge or a logo that implies or promises certain values on behalf of something else. By contrast, no embryo is visible to the human eye without ultrasound, unless situated *in vitro*. A symbol is not usually the thing itself (albeit in an earlier developmental phase) - embryos seem to 'symbolise' their own future. Living persons can be symbols, for example the President of the United States (Bortolotti and Harris 2006, 23), but then they are symbolic of something other than themselves –

the nation and its values. Unless we accept McMahan's account that we were never six-day-old embryos (McMahan 2007, 171-2), whereby an embryo is not continuously identical with the person that will be born, then it is hard to separate the 'embryo as a symbol' from the thing it symbolises (a human being).

Symbolic value is not a necessary constituent of, or justification for, any moral or legal restrictions. Like other concepts, it is ill-defined, but there are particularly few restrictions on its use, which becomes very subjective. Again, in common usage few would be able to explain what the concept designates and what use it may be put to. There seems no need for a separate concept of symbolic value, which complicates rather than clarifies the moral protection required for an embryo/fetus.

2.7 Moral value

2.7.1 Meaning

Bortolotti and Harris suggest that 'in the philosophical literature, there is an important distinction between moral status and moral value' (2006, 22). In their view, only those with interests may have MS, but 'some nonsentient beings such as early human embryos can have moral value that derives from their symbolic significance' (Bortolotti and Harris 2006, 22). MS merits inviolability. In contrast, moral value does not, but requires only extrinsic values such as relational and social values. Moral value indicates that there are limits to the way that an entity can be treated, not for the entity's own sake, but because of the effect it would have on third parties who care about it (Steinbock 2007, 433). In Steinbock's view, moral value is something that 'gives content to the notion of respect for embryos' (2007, 433), but as she considers that embryos/fetuses lack personal interests, this is based on how others feel towards them. She argues that a flag has more than the symbolic value previously discussed: it has moral value because in addition to its symbolic value, which is subjective and may only extend to a particular group or culture as has been noted, others outside that culture should be sensitive to others' feelings and show respect for them. Moral value therefore appears to consist of symbolic value plus sensitivity to other moral agents' attributions

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of MS. This is the type of ‘special respect’ (2007, 435) that Steinbock considers is due to the human embryo and dead bodies. It denotes that even when a being lacks interests, such as a corpse, we may have reasons to protect them and treat them in a particular way that does not reduce their value to commercial worth. In the case of the corpse, Steinbock (1992) argues that the wishes of the dead as to the disposal of their body can be explained within the morality of interests. But she fails to explain why we should respect the interests of someone who is dead (past interests), yet dismiss the future interests of an embryo that is developing (future interests, albeit uncertain) (Steinbock 1992, 41).

Any non-sentient being can have moral value ‘if there are moral reasons why they ought to be preserved’ (Steinbock 1992, 166). This suggests that a car that is of particular importance to an individual can have moral value, because it improves their quality of life. This widens the scope of the concept to almost everything in existence if at any time it makes a difference to the quality of life of a person. This would then no longer be a truly moral concept.

2.7.2 Function

There are important differences between the kind of protection due to animals developing sentience; creatures that are living but will never be sentient; the protection due to an area of outstanding natural beauty or special scientific interest; and that due to a work of art, which is valuable but not living. If we ascribe moral value to all these different entities, we are in danger of conflating their widely differing needs for protection on a moral basis. All may deserve protection, but not for the same reasons or meriting the same obligations. A work of art may require expert renovation and a temperature controlled environment to protect it, a living entity requires sustenance and love. A more sophisticated valuation system is required to consider the wide variety of different entities that require valuation on a moral scale.

Moral value may be a precursor to MS, but there seem to be no valid grounds for considering it as a standalone concept. Its description applies too widely, as the preceding paragraph makes clear, and is not usage fixing. I will argue in Chapter Three that the embryo/fetus has intrinsic value based on life and potential, and therefore moral value is not appropriate for my subject. Perhaps

because of the width of its scope, in order to explain what moral value means in context, it draws heavily on other concepts such as symbolic value, special status or respect. There are no particular obligations or protections associated with the term. Furthermore, it is not a phrase with any everyday usage to inform understanding of the concept, so there are no reasons to prefer it to MS.

2.8 Assessing the concepts

In order to establish whether MS is the most useful concept for denoting protection to the embryo/fetus, or whether there are others more appropriate, it was necessary to examine alternative concepts to MS to see if any provide a more appropriate way of thinking about how we ought to treat the embryo/pre-sentient fetus. Many of the concepts' weaknesses were similar: lack of a definition that clearly fixes how it ought to be applied, and is neither too inclusive or too exclusive. There was much overlap, interrelationship and fluidity between concepts. In discussing symbolic value for example, Robertson (1995) and Steinbock (1992) both need to refer to respect, and Gibson (2007) refers to symbolic value, special status and MS. One thing these alternatives have in common is their proponent's desire to express and reinforce a view that there *should* be some commonly agreed way of valuing this entity that does not confer the stringent obligations of FMS.

Of the five concepts examined in this chapter, it has been difficult to discuss any without reference to respect, which is integral to our understanding of MS, making this the key alternative candidate. Respect is also the most widely applied term in everyday use, with multiple applications, so "folk understanding" does not inform the philosophical concept: if anything, it confuses matters in application to the embryo/fetus. The concept of respect seems no more capable of drawing together the disparate views on the embryo than MS. Although Meyer and Nelson (2001) provide a clear account of respect and how it might function, it draws heavily on Warren's (1997) work on MS. They admit that '[p]lainly this kind of [moral] respect is dependent on a reckoning of the entity's moral status' (Meyer and Nelson 2001, 17). Respect is viewed as concomitant with MS, not a replacement for it, so is clearly not a preferable concept to use for this work.

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Special status lacks definition but its normative function is precisely indicated by law. However, its application is specific to embryos up to 14 days, not later fetuses or persons, so it is too specific for my use. Symbolic value is ascribed to entities with no intrinsic value, and has no precise definition. Its function is similar in many ways to special status, it is to indicate that there are some forms of research to which an embryo ought not to be subjected, in particular to prevent the creation of embryos for research only (Steinbock 1992, 41). However, its breadth of application (to flags and other inanimate objects) and lack of specificity make it a poor candidate for this work. Similarly, moral value has a very wide scope, and no fixed usage. It is applied on the basis of extrinsic value only, which widens the scope to almost anything that is valued subjectively by someone. There is thus no outstanding candidate that better fixes usage, explains its role, is normative or gives clear guidance for how to treat the entity to which the concept is applied.

Few outside the world of philosophy or law would understand what is meant by symbolic value, special status or moral value, and they can be interchangeable. However, there is a general “folk” understanding of what we mean by MS: it implies that there are right and wrong ways of treating entity (“moral”), and that the entity has a particular standing, which may be flexible (“status”). Unlike symbolic or moral value, it requires intrinsic reasons as well as extrinsic that deserve our particular consideration, which narrows its scope. MS emerges as the concept most aligned with the aims of compassion and justice through fair treatment for all entities.

Contra Steinbock, I consider that the confusion that has arisen in discussing our obligations towards the human embryo is not due to a failure to recognise the distinction between MS and moral value (1992, 166), but in the introduction and attempts to define a variety of terms such as symbolic value, special status, respect and moral value. If clarity of thought and ability to communicate are key philosophical concepts, then what is being discussed should be understood through everyday meanings too. Where there is a widespread general understanding of what is meant by a term, MS emerges as the strongest concept through which to analyse our treatment of the embryo/fetus, with the advantages that: a) it maintains a single currency of value, and b) it enables usage restrictions to be explained and justified by the changing developmental status of the entity. The former is particularly important when the entities under analysis are very different from

the paradigm. If the entities and the concepts applied vary, the arguments cannot be commensurable.

My objective in this thesis is to establish how we ought to treat the embryo/fetus, and to establish what our value attitudes ought to be towards such interactions. Since the question of whether an embryo has MS or not first arose, this concept has traditionally been used to provide an answer (Callahan 1970, Sumner 1981). But as it been used both to argue that embryos have both full (Gómez-Lobo 2007) and zero MS (Harris 1999), then either there are multiple different concepts at play, all of which are called MS, or there is a general concept of MS that needs to be more specifically defined to avoid being over- or under-inclusive. As I argued in the previous chapter, the traditional applications of the concept have diverged to the point that there is a strong basis for its re-evaluation. However, I maintain that it remains useful in earmarking those entities that moral agents ought to treat in a special way because they have, or will have, a wellbeing of their own that should be weighed against other concerns. We need to have an agreed moral code to guide a civilised society about ‘when it is morally permissible to harm living things, and when it is right for third parties to intervene in order to prevent that harm’ (Warren 1997, 39), and therefore, rather than eliminate the theory of MS, I propose that it should be re-evaluated and its parameters moderated. In endeavouring to find a middle way that proposes development-appropriate guidance for its usage when applied to embryos/fetuses, the intention is to initiate renewed discussion that improves the guidance the concept gives to other marginal entities, though this is a challenge. Warren points out that many basic characteristics (such as life) develop over many generations and lack the neat single (or multiple) necessary and sufficient condition for application (1997, 26-7), but substituting a different concept, or trying to artificially sharpen definitions might even prove harmful.

2.9 Summary

In this chapter I have analysed the concept of MS and questioned whether it is the most useful concept to use to analyse how we ought to treat embryos/fetuses. Though MS is a concept which

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has no fixed usage, due to multiple definitions and different types of MS (Warren 1997, 21), nor has respect, and other concepts have serious drawbacks. I think MS is the best concept upon which to ground my re-evaluation. It has been the basis of much previous work in this area (Warren 1997, DeGrazia 2008; Strong 1997a; Dwyer 2011) which can be built on, and the concept can be applied to every stage of human development, unlike special status, symbolic value or moral value, which would not be appropriately applied to a person. On the principle of Occam's razor, there is no need to use several concepts when one will do.

I consider that in discussions about how to treat non-paradigm entities, the dominance of the concept of MS (Uí Chonnachtaigh 2012) and discussions surrounding its parameters is a healthy state of affairs. We need to re-assess constantly and pinpoint the basis on which we should give certain protections to such entities. In acknowledging the difficulties between reconciling our attitudes towards embryos, their loss through natural or technological causes, and our pragmatic needs, Katrien Devolder and John Harris ask, '[d]oes this mean we should accord a moral status to early embryos that is compatible with their use for purposes considered morally at least as important as creating new life, such as saving lives through stem cell research?' (2007, 163). I consider that it does, and this work is intended to ensure that the embryo/fetus is neither over- nor under-protected, but treated according to their current properties (including their potential), with reasons that substantiate their treatment. These properties will be discussed in detail in the following chapter, where I will propose grounds for a suggested re-evaluation of the concept of MS in application to the embryo/fetus.

CHAPTER THREE: MULTIPLE CRITERIA, A NEW MODEL, AND ENSUING OBLIGATIONS

*'If something has value in itself, then it follows that it is worthy of some moral consideration in our actions'*⁷

3.1 Introduction

In this chapter I will answer three questions: why any MS should be ascribed to embryos/fetuses; which criteria are relevant to them (which will form my new model); and what kind of obligations these might incur. The prevalent view is that moral agents have no obligations to early embryos, because either they are not numerically identical to the person who develops (Marquis 2007), which I will refute in 3.2, or there is a lack of psychological continuity with the future person (McMahan, 2007). I will argue that the embryo/fetus ought to be ascribed some MS because there is a genetic continuity with the person they will become, despite the lack of numerical identity.

Next, I will evaluate existing multi-criterial accounts in 3.3. Warren presents a comprehensive theory (1997), and Dwyer (2011) argues for its application to children based on a range of degrees as well as multiple criteria, but there are weaknesses. In 3.4 I will analyse the benefits that a multi-criterial view brings to MS in enabling us to pinpoint which elements require particular treatment. MS has not previously been applied on an incremental basis to the embryo and fetus (with the exception of Strong 1997b, 41-62), due to the prevalent view that the embryo/fetus does not merit MS. A few notable exceptions (Warren 1997, Harman 1999, DeGrazia 2008, Persson and Savulescu 2010) consider that *some* MS might apply to the embryo/fetus. The problems identified in the uni-criterial views examined in Chapter One and the multi-criterial views here provide the basis for my argument that the concept of MS needs re-evaluating. I will address

⁷ Aaron Simmons (2012) Do Embryos Have Interests? Why Embryos are Identical to Future Persons but Not Harmed by Death. *Journal of Bioethical Inquiry*, 9(1) 65.

this by introducing a new model informed by a virtue ethics framework. In this chapter (in 3.5) I will identify the four relevant criteria applicable to the embryo: life, genetic potential, relationship and function, and justify their selection. I will discuss the operation of the model in Chapter Four. Finally, in 3.6 I will discuss the obligations that relate to the concept of MS, before summarising my findings.

3.2 Why minimal MS should apply to embryos and fetuses

Many philosophers (e.g. Steinbock 1992; Singer 1993; Harris 1999) exclude embryos and fetuses from MS, on two grounds. First, they assume that MS is a concept that demands the most stringent obligations against interference (Jaworska and Tannenbaum 2018, s.2), which I will refute in Chapter Four. Second, they consider that as the embryo has no capacity for experience that relates to the person they might become, there is no continuity between the embryo and the person and so no claim to MS. In this section, I aim at least to cast doubt on the importance of the argument that we are not personally identical to the embryo that produced us, and argue that it is sufficient that we remain genetically continuous. What forms our identity is a complex philosophical debate: Gómez-Lobo (2007) and DeGrazia (2006, 51⁸) argue that we are essentially organisms, and identity is physical. Others (Singer 1993, Harris 1985) consider that a person emerges once self-consciousness develops.

There are two schools of thought on what happens as cells divide between syngamy and individuation, and whether persons are physically continuous with embryos. One is that when cells divide before differentiation, two new cells form from the old, neither of which can be identical with the mother cell without being identical with each other, which is not numerically possible under the transitivity of identity (McMahan 2002, 27). If the cell ceases to exist, then there is no personal identity that persists until differentiation. Monozygotic twins are produced by fission, so do not begin to exist as zygotes (as discussed in 1.2.2). This is the reason that Marquis does not

⁸ Though DeGrazia considers that the organism forms several cell divisions after conception.

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consider that the embryo has a valuable future before individuation (2007). An early embryo is merely a collection of cells not yet forming a human organism, McMahan argues (2007, 178). He doubts whether the pre-individuated embryo has the necessary and sufficient degree of coordination before the cells' functions specialise to enable us to be sure that there is one human organism (assuming that this is comprised of various living parts functioning together to sustain a single life), rather than a collection of parts he likens to marbles in a sack (McMahan 2007, 179). However, Gómez-Lobo contends that even the earliest human cells must be co-ordinating as an organism, because from the second cleavage, 'one of the two blastomeres divides meridionally and the other equatorially' (2007, 459), inferring an information control mechanism.

The second view that physically we are continuous is that as the cell divides, nothing is lost so the individual persists. The successive cell divisions are all events in the history of a single individual (McMahan 2002, 27), which can explain the monozygotic twinning issue too. Even if an embryo fissions, resulting in twins (or two embryos fuse forming one individual), however many individuals are produced, all remain genetically continuous with the zygote from which they developed. Eric Olson claims that we are biologically numerically identical with the embryo that formed us (1997, 100). If a fetus does not become a person, what then happens to the fetus? Either it dies and a person takes its place, or it is subsumed into the person – both are hard to believe. Olson proposes that we are living organisms, and have our criterion of identity by virtue of being organisms, not of being people (1997, 106). There is no sudden change in substance (Gómez-Lobo 2005, 107), and as Gómez-Lobo argues, no point at which the precursor disappears and its successor begins to exist, the embryo and the person it becomes are not numerically distinct (Gómez-Lobo 2007, 461).

I consider that the argument that embryos lack continuous physical identity with persons is implausible. Every cell in the early embryo, except those cells that will form the extraneous material (amnion, chorion and placenta) and separate, will have their descendants present in the person. While it may be philosophically accurate to claim that because the two entities are not absolutely identical there is no continuous identity, it is also misleading. It suggests that there is something missing in the embryo, whereas it is the reverse: it is the person that has extraneous

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material missing (discarded at birth). What is important about the continuity of identity when comparing two very different entities like the embryo and the person that develops from this, it seems to me, is that all the biological material needed teleologically to form a person at the beginning is contained in the finished product, even if that is not every cell from the original embryo. To claim that because some cells had a different function in the development process which meant they were discarded once that function had been performed, would be like claiming that a rocket never landed on the moon because parts were jettisoned before landing. I do not think this negates any claim to MS for the embryo, because there is a genetic continuity from syngamy. No external event changes the physical constituents from zygote to blastocyst to embryo and fetus; and even if much of the early embryonic matter develops into a fetal support system and does not develop into our bodies, some of it does. There are no additions that change the physical continuity, as Gómez-Lobo observes (2005, 105). Even if the link to the early embryo is highly tenuous, and those early cells seem to have more in common with “potential to produce” than “potential to become”, the lack of change of substance means that part of the early embryo actually does form the embryo proper. What is important is that the embryo has the genetic basis for moral agency, and that the genes are activated and coordinating with each other to develop into a human (Liao 2010, 165; Gómez-Lobo 2007, 461). This, in my opinion, justifies treating the entity with a minimal level of MS. Such a low level would not prohibit their destruction, but it would require moral justification for doing so.

Singer argues for psychological discontinuity between an embryo and a person. He does not think that he is the infant from whom he developed (Singer 1993, 97), because to have an identity relation with X, X must be able to conceive of herself as a future person. In his view, self-consciousness is a necessary condition for possessing any significant mental link that could establish an identity relation. If we are essentially persons, embryos have only a weak potential to *produce* persons – their matter will go into the person but they will never become persons themselves, so lack identity-preserving potential (Singer 1993, 98). His view raises the question of what happened to the embryo from which he developed. If it died, we would surely observe this

and it would be a substantial change, so if this argument is plausible, Singer's predecessor must have changed in another sense that remains unexplained.

However, McMahan (2007) has produced one of the most cogent arguments against MS for embryos/fetuses, considering that we do not begin to exist until our mind functions (his "embodied mind" account), and only from that moment can "we" be continuously identical with the person resulting from that fetus. McMahan's claim that "we" were never six-day-old embryos does not deny that people develop from embryos biologically, and in one sense, therefore, I originated as an embryo. McMahan's view is that what makes us who we are is not merely biological, but depends on our mental life: we are embodied minds (2007, 186), which cannot pre-date the functioning of the brain and consciousness. However, the physical body alone is not what makes us "us", or we would not cease to exist at death until our bodies decompose (McMahan 2002, 30).

McMahan does not base his case for lack of continuity with the embryo on the familiar argument that because twinning is possible up to the age of around 14 days, we cannot be sure whether there is one individual or two that exist before this point (when 98% of embryos do not twin (Hall 2003, 735)). He rightly considers that the fact that an entity can divide (like an amoeba) does not prevent it being a unique individual up to fission (2007, 177, also Gómez-Lobo 2007, 459). There are no scientific tests to prove that we are not essentially human organisms, so this is a metaphysical question, and McMahan uses an intuitive philosophical argument. He asks us to consider identical twins in an accident which kills one's brain and the other's body, so that surgeons transplant the surviving brain into the surviving body, but which of the twins survives – the mind or the body (McMahan 2007, 181-2)? Most of us, he thinks, would assert that the identity follows the brain not the body, which implies that we are not essentially human organisms. Take McMahan's real life example of dicephalic twins (two heads conjoined on one body): both twins cannot be the organism, because that would imply that they are not distinct individuals but the same person. This more strongly persuades that our essence does not reside in the physical (McMahan 2007, 182). Neither is identical with the organism, and perhaps we are not either. And if we are not human organisms, then even if a human organism begins to exist at conception, McMahan thinks it does not follow that we begin to exist then. It appears that with twins and

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conjoined twins, there are natural exceptions to the idea of the importance of physical individuality and continuity. McMahan concludes that “we” are not human organisms, and nor are we souls (2007, 183). If human beings are neither essentially organisms or souls, then McMahan reasons that we should think about at what point a person with dementia remains identifiably a person, and concludes that ‘as long as there is a subject of experiences present, or if it is possible to revive a subject of experiences in your body, then *someone* is present’ (2007, 186), and you cease when the capacity for consciousness ceases. By applying this reasoning to the beginning of life, we do not begin to exist until we have the capacity for consciousness, but as that is co-dependent on having a human organism, ‘what we essentially are is “embodied mind”’ (McMahan 2007, 186).

His argument that the embryo is not continuously identical with a person is that:

P1: An embryo is not continuously identical with a person, but is a precursor to it

P2: Continuity of identity does not start until we are embodied minds

P3: An embodied mind requires being a human organism with capacity for consciousness (around 22-28 weeks after conception) (McMahan 2007, 186)

P4: Only after the development of that capacity is there anyone who can be harmed or wronged by being killed (someone with MS)

C: Therefore an embryo/pre-sentient fetus does not have MS.

However, I challenge the truth of (P2): an embryo is genetically continuous with the person they will become. Our genetic code is formed at syngamy and the DNA does not change. While we are obviously very different entities from embryos, there is no proof of discontinuity biologically, and in this absence we can only assume that something persists, though it is not identical. Genes determine whether we will become a person, and what kind of person we will become physically. As we learn more about genes and epigenetics, it seems more likely that psychological predispositions are genetic too, such as addictions that are ‘highly heritable’ (Bevilacqua and Goldman 2009). Given that there is this genetic link between embryo and person, we have a *prima facie* responsibility (albeit weak and easily surmountable) to enable that embryo to fulfil their potential to develop sophisticated capacities without losing their identity (Jaworska and Tannenbaum 2018, 5.2), if they have that potential.

I have argued that even if the embryo is not continuously physically identical with the person, there is enough of a genetic link between the two (even if twinning occurs) to prove a physical continuity, and dependent on other criteria (such as whether the embryo is wanted for reproductive purposes), it may justify ascribing a minimum MS triggering certain obligations. Though genetic continuity alone does not provide enough reason to ascribe any MS to the embryo, I will contend that it is part of their potential and a contributory factor. The presumption against killing may be weak, and certainly not at a level equal to persons, but it does prevent interference for certain reasons.

3.3 Multi-criterial MS and its implications for the embryo

One important account of MS that has not yet been discussed is MS based on multiple criteria. Warren's seminal work, *Moral Status*, argues that no single criterion view of MS can be necessary and sufficient, and that extrinsic or relational criteria make important contributions to a convincing theory of multi-criterial MS (1997, 20 & 122-47). Formerly a staunch advocate of personhood as a sole criterion (1973, s.4), Warren was influenced by work on the expansion of the moral community by environmental ethicists (Leopold 1949, Callicott 1980), animal rights ethicists (Singer 1993, Regan 1985) and work on the Ethics of Care (Gilligan 1982, Noddings 1984). Warren argues that neither J. Baird Callicott's nor Nel Noddings's views provide satisfactory sole accounts of MS, but in combination with intrinsic values, they add an important new dimension to the concept: the importance of social relationships to MS (1997, 146). Warren's original contribution is a theory that there are many different types of MS - environmental, relational, traditional - and a firm belief in the importance and validity of common sense moral beliefs and practices, each carrying different obligations, dependent on the contributory criteria (1997). There are many different reasons for ascribing MS, and each may trigger different obligations, but in my view the overall concept denotes that X is a subject, not merely an object, and that moral agents must then consider how to treat X.

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Warren's views bring the benefits of multiple contributory factors while avoiding the moral pluralism of Christopher Stone's similar approach (Stone 1987a, 13), which implies that there are any number of equally valid but incompatible moral theories that are all defensible, and which would fail to provide a moral guide (1997, 20). Nor is she a moral relativist, believing that all is dependent on cultural context: rather, she considers that MS provides moral parameters that have a 'substantial consensus' about its ascription (Warren 1997, 9).

3.3.1 Warren's seven principles

Warren develops seven principles to reflect the 'common-sense morality' of thoughtful people (1997, 149). Four of these are intrinsic (based on life, sentience, moral agency and human rights), but the other three (ecology, animals in social communities, and respect for others' beliefs) depend on relationships with the outside world. Warren considers that the seven principles operate interactively, and are defensible using common sense (1997, 149). 'Respect for Life' (1997, 149-152) is an ideal that holds that no living organism should be killed or harmed *without good reason*, an important caveat which allows for justifiable exceptions. Warren considers it unreasonable to respect all living things equally (Warren 1997, 49), unlike Schweitzer (2009). 'Anti-Cruelty' (1997, 152-156) protects sentient beings from being killed or subjected to harm unless this conflicts with human beings or others of a stronger MS. Her 'Agent's Rights Principle' (1997, 156-163) ascribes full and equal moral rights to moral agents. Warren's 'Human Rights Principle' (1997, 163-166) gives special protection to sentient humans who are not moral agents, such as young children and cognitively impaired people, because their interests carry the same weight as other humans, though this obviously excludes pre-sentient humans. The 'Ecological Principle' (1997, 166-168) ascribes MS to living things that are not moral agents but are important to their own ecosystems of which they are part, and also to non-living but ecologically important entities not alive, such as species or habitats. Her "Interspecific Principle" (1997, 168-170) ascribes MS to some sentient animals due to their social relationships with human beings. 'Transitivity of Respect' (1997, 170-172) demands that we respect other moral agents' reasonable attributions of MS and give them a fair hearing.

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Her eclectic views provide a more nuanced view of MS by widening consideration from solely intrinsic properties to extrinsic factors such as an entity's circumstances, societal position and caring relationships. However, though she does not openly acknowledge any hierarchy of MS, she does state that not all beings are equal (Warren 1997, 153), and that the strength of reasons needed to justify harming an entity depends on 'additional factors' specified in the relational principles (1997, 149). She contends that the moral rights of animals are weaker than those of human beings, though some can be 'enough *like*' moral agents to accord almost FMS (1997, 169). However, disagreements about how much MS to ascribe will occur in some circumstances, despite rational discourse, and particularly over their use in biomedical research (1997, 171). She considers that apart from moral agency (which as a sole criterion excludes too many entities with a good claim to MS), neither life, sentience nor personhood are necessary for any MS, and none are necessary and sufficient for FMS (Warren 1997, 122). However, each are sound moral principles that justify some valid moral consideration.

Only two of these principles ascribe a minimal MS to the embryo: the first is 'Respect for Life' (Warren 1997, 149-152). Warren claims that harming living things is morally undesirable, but acknowledges that if there are morally sound reasons to do so then we do not have to feel guilty for destroying organisms that have no other claim to MS than being alive (Warren 1997, 149). This is more pragmatic and rational than Schweitzer's idealism (2009), enabling us to harvest our food, despite it necessitating killing sentient creatures like field mice and insects, and to keep ourselves and our environment clean and free from bacteria and toxic pesticides (Warren 1997, 79). Though this provides a moral floor for treating embryos as subjects, she points out the need to balance this with relational properties such as their location in and dependence on a woman's body, someone usually both sentient and a moral agent (Warren 1997, 202).

The second principle Warren thinks is applicable to an embryo is 'Transitivity of Respect', where we are required to respect another person's 'reasonable' attributions of MS, even if we do not agree with them (Warren 1997, 170-2). As there are many conceptionists who ascribe FMS to embryos (CDF 1987; Iglesias 1990; Gómez-Lobo 2005), we as moral agents must respect their autonomous ascription, provided there are reasonable grounds. This is markedly different from

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Warren's other principles because it requires consideration of other moral agents rather than the entity we are valuing for its own sake. Warren suggests an additional way in which Transitivity of Respect might apply to a pre-sentient fetus, and that is in considering its social context (1997, 211). While a pre-sentient fetus is not a member of the human social community in the way that they are after birth, they may be greatly valued by prospective parents, family members and friends, so the Transitivity of Respect principle may give fetuses stronger MS than that based on their intrinsic properties alone (Warren 1997, 211). However, this principle appears to be a catch-all, without basis in any moral principle, created to cover anything not included by the six other principles, as an attempt to create consensus. It brings us back to the problems that would be caused by moral pluralism in that it is difficult to equate the polar opposite views on what ascribes MS. As Warren herself admits, there is no solution to the impasse (Warren 1997, 209). For this reason, I will not be using this principle to justify MS for the embryo in my model, leaving only 'Respect for Life' from Warren's criteria to ascribe MS to the embryo (Warren 1997, 149).

Life alone is not sufficient to prevent the embryo's use in research. hESCR provides the strongest justification for killing an embryo because of the potential benefits to everyone in finding treatments for the biggest killer diseases such as cancer, heart disease or stroke, and have public backing (Harris Interactive 2010). Devolder suggests that there are strong reasons of beneficence in pursuing this research, counteracting the moral negative of killing the embryo (2015, 31). Compassion for the suffering of currently existing people also justifies this usage where embryos are surplus to reproductive requirement. Aaron Simmons similarly argues that we have greater moral obligations to actual persons whose intrinsic value outweighs that of embryos, which means it is not unethical to destroy embryos for medical research (2012, 66). I concur with Simmons that it is not always unethical, dependent on the grounds and type of research, as I will clarify in Chapter Five.

Warren's principles do not each convey equal amounts of MS in my view; this is implied by the need to balance and adjust principles to the realities of human existence and functioning of ecosystems (1997, 172). The importance of sentience seems greater than Transitivity of Respect, given that she states the consideration should begin with an analysis of harms, for example (1997,

13). The harm done through infliction of pain seems more fundamental to wellbeing than the harm done by not agreeing with another's ascription of MS. This implies that there may be differing weights to her principles, but she does not explore this area. However, one of the benefits of her work is in explaining how relationship can affect MS, which is important for embryos/fetuses, and I will discuss this later in 3.5.3.

3.3.2 Dwyer's contribution

Dwyer adds further distinctions to the multi-criterial approach by extending the range of applicable criteria and considering MS to be a matter of degree (2011). He rightly argues that the single criterion view must be wrong: the basic mechanisms by which humans come to ascribe MS intuitively generate many criteria, not just one (Dwyer 2011, 91). Proponents of uni-criterial views need to explain why other characteristics that generate empathy, a sense of self-worth, or awe are morally irrelevant, and only their preferred criterion is relevant. They have uniformly failed to present sufficient argument for excluding all other criteria (Dwyer 2011, 60). He disagrees with moral theorists who argue or assume that ascription entails full and equal MS, '[t]he concept of moral status clearly allows for variation in magnitude from one being to another, with corresponding degrees in the amount of consideration owed to a being' (Dwyer 2011, 11).

In Dwyer's view, the 'ultimate foundation' for anyone's intuition about characteristics that ascribe MS is that these characteristic triggers one or more psychological processes: empathy, moral reasoning, awe and disgust. These appeal to widespread and deep intuitions about what matters morally, and will be rationally consistent (Dwyer 2011, 31). Dwyer considers that the major advantage of the multi-criterial view is that it better explains 'why an embryo has some moral status but not necessarily the same as that of a normal, conscious, postbirth individual' (Dwyer 2011, 131). It clarifies why we value humans over pigs even when the pigs have higher conscious awareness, and why, though we should not kill a mosquito for fun, it is acceptable to eradicate them on a large scale to prevent disease in humans. Once you extend the moral realm beyond human beings, Dwyer considers that thresholds are hard to maintain (2011, 77), whether based on one criterion or multiple, because every criterion varies in strength creating more of a hierarchy

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than a threshold (2011, 77). Although not the first to suggest that MS may be a matter of degree (see Harman 2003, DeGrazia 2008), Dwyer favours this view, considering that ‘...most theorists have failed to consider adequately whether the degree of moral status might vary among all beings who have some’ (2011, 54). However, while agreeing that MS is not binary, I will argue that there is no practical advantage in considering it a continuum: instead, I focus on the outcomes (how we ought to treat an entity), which may produce differing levels of obligation owed, due to the different requirements presented by combinations and strengths of criteria applicable. The dominance of uni-criterial views mean that little attention has been paid to analysing relative weight or importance of multiple criteria, so I will discuss these in Chapter Four (4.4).

Dwyer concentrates on four main criteria (life, relationship, sentience and higher cognitive functioning), but considers that there are sub-categories within these (such as degree of aliveness, if an embryo is compared to an infant or a lively toddler, for example), and additional criteria that have been overlooked or underrated, such as potential, talent, awe-inspiring beauty and virtue (2011, 61-130). Dwyer argues it is important to consider whether the degree to which a criterion is manifest affects MS, because the degree to which children and adults manifest aliveness might affect their relative MS (2011, 63). In his view, potential to have certain criteria in the future is much underrated as the basis for the attribution of MS (Dwyer 2011, 74, 130), and this is one of my conclusions with regard to the embryo/fetus, as I will argue in 3.5.2.

Dwyer questions many established ideas about MS: the dominance of the uni-criterial view; why it should be equal for all and not a matter of degree; whether it is fixed or changes over the course of a life, as common social practice infers (2011, 25). He argues that criteria change as society learns from its mistakes, and makes moral progress, for example with race, disability, and currently gender (2011, 50-51). His contribution has been very influential to my argument that both multiple criteria *and* multiple levels need to be taken into account when assessing how we ought to treat an entity.

3.4 Weaknesses of multi-criterial MS

Multi-criterial MS offers many advantages over uni-criterial views because it is more flexible, less over-inclusive or over-exclusive, offers more precisely tailored obligations for entities rather than a “one-size-fits-all” solution, protects vulnerable entities, and is more consistent with moral psychology. However, there are drawbacks. Dwyer’s theory is preferable because it acknowledges further criteria and a scalar approach, but both can be seen as creating a moral hierarchy, which many object to as grounding ‘pernicious prejudices’ such as racism or speciesism (Regan 2004, 229; Harris 1999, 303). However, it is not the hierarchy itself that creates such prejudices, it is the interpretation placed on the implications, which multiple criteria should alleviate. Additionally, there is little guidance on how to apply multiple criteria, other than an indication that both intrinsic and extrinsic properties are required (Warren 1997, 21). There is no suggestion for how to weigh them against each other, whether all criteria carry equal weight or not, how to calculate relative levels of each criterion if there are degrees within each, or how to settle any lack of consensus. Multi-criterial MS is undeniably complex: it can lead to inequality whatever the views, and possibly to moral incommensurability, the idea that we are not comparing like with like.

The multi-criterial view lacks three features that are pertinent to my original research question, which is what MS, if any, ought to be ascribed to the human embryo/fetus. These are (1) some explanation of how to assess the MS of an embryo, (2) an explanation of how it increases, and (3) a description of what obligations ought to be ascribed at each level. In Chapter Two I argued that MS is the correct concept to use, but neither full nor zero MS is appropriate for what, metaphysically, is a living human entity who potentially has the capacity, under certain extrinsic circumstances, to become a person, and who is genetically continuous from embryo to personhood (as I established in 3.2). In 3.3 I established the plausibility of the argument that MS has multiple criteria, and that it is not either only present or absent, but can increase. I will now examine what criteria the embryo/fetus may have, and what the implications are for their treatment.

3.5 Criteria relevant to ascribing MS to an embryo

In this section, I will begin to present my model by setting out four pertinent criteria which, in combination, may ascribe a low but increasing level of MS to the embryo/fetus. These are life, genetic potential to become a person, relationship and function. When more than one pertains, this denotes that the entity is not an object that moral agents can do with as they will, provided it does not harm others. MS does not correlate with a right to life (contra Liao 2010, 162); nor does the embryo/fetus have legal rights (Scott 2002, xxvii; DHSS and Warnock 1984, 62), but there are limitations. There may be ways that they could be treated that would be morally objectionable.

I will attempt to answer Pugh's questions about which aspect of the embryo is morally relevant and why some uses fail to acknowledge what is morally relevant about the embryo (2014, 422). First, I will consider the intrinsic properties an embryo possesses, by which I mean one that is naturally present in the embryo, for example, life. An extrinsic property is a relevant external influence, which I will discuss in 3.5.3-3.5.4.

3.5.1 Life

The first intrinsic property relevant to the embryo/fetus is life, by which I mean a functioning organism that ingests, metabolises and grows (Warren 1997, 25). Doubt was cast in 3.2 on whether an early embryo is an organism (McMahan 2007), but I follow Gómez-Lobo (2005) in considering that cellular organisation is present from the two-cell division. The problem with Schweitzer's all-inclusive 'reverence for life' (1.2.1) is that it includes many creatures that cannot easily co-exist, humans and animals that prey on us or viruses that kill us, but life is a sole criterion that ascribes equal FMS in his theory (2009). I consider that life may be possessed by different entities to different degrees, so not every living thing is treated equally (Goodpaster 1978, 310-11). Living creatures with needs that can be harmed or benefited have a good or wellbeing, inasmuch as those conditions that promote their life, and morality is about benefits, harms and goods. Living things tend to have a teleological purpose, such as a flower to reproduce, even if it lacks a conscious will to live. Without this internal purpose or driving force (*telos*), the entity would never maintain its life and fulfil its potential. It is one way in which non-sentient beings can be thought to have an

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interest – remaining alive and having conditions that enable that (Goodpaster 1978, 319). Goodpaster argues that all living things are impelled by some teleological system that has functions, ends, directions, natural tendencies, which bring concomitant needs – conditions that must be satisfied if they are to flourish - and therefore create the capacity to be harmed or benefited (1978, 320). Not fulfilling them is harm. Sumner critiqued life as a criterion based on Goodpaster's reasoning that all living creatures can be harmed, by pointing out that beings do not have to be organisms to have a teleological system that can be harmed: cars can be included (1981, 135). Sumner considers that there is no moral dimension from life unless there is an element of a psychology to be benefited or harmed, which in his view comes with sentience. I agree that life cannot be a standalone criterion, because then it is over-inclusive. Life is important for embryos because they may one day be valuable, and to deny that development without sufficient justification would lack compassion.

Warren considers life an important contributor to MS, though neither necessary nor sufficient as a standalone criterion (1997, 45), a stance I agree with. Artificial intelligence might justify MS, but is not alive. I follow her in taking a 'Life Plus' view – it is a contributory factor but not a standalone criterion, it is limited by other criteria so that it does not create the perpetual moral conflicts that limit everyday activities (Warren 1997, 37). We have to be able to harvest crops, despite some living creatures being harmed while doing so; we should permit experimentation on relevant life forms within strict moral limits, to enable the resultant increase in knowledge and medicines; and we must be permitted to kill bacteria, viruses or anything likely to harm or kill us, including mosquitoes, teratomas or hydatidiform moles. Warren's view, that there may be necessary and justifiable reasons to harm the living entity, seems more workable than Goodpaster's. Life is not a necessary criterion, as some form of artificial intelligence or an extraterrestrial that is not carbon-based may be ascribed MS due to other criteria if there is sufficient justification. The advantage of life as a contributory factor is that it can be empirically proven, and is usually easily observed. It rules out gametes which are living cells, but not organisms until, arguably (*pace* McMahan 2007), syngamy. MS is about entities that can be benefited or

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harmed and generally, conditions that promote life are good, and those that do not tend to be bad (Sumner 1981, p.132).

Life is an important contributory factor to MS, though it is not sufficient on its own. As a sole criterion, it is over-inclusive and would ascribe some MS to entities that do not merit moral consideration, while excluding entities that are not alive that may do. The question is what level of life must an organism possess to justify (in combination with at least one other criterion) a minimal level of MS. Perhaps the first assumption should be that nothing living should be destroyed unless it is justifiable; for example, to stop humans starving, or dying of preventable diseases. In the pursuit of justice, every living thing should be given fair chance to continue living unless there is a good reason to kill it. Other criteria can combine with life to form a minimal MS.

3.5.2 Genetic potential to become a person

The second intrinsic criterion is an embryo's genetic potential to become a person. This is contentious: it has its proponents (Noonan 1968; Quinn 1984; Stone 1987b; Deckers 2005; Gómez-Lobo 2005; Dwyer 2011, 74), and its critics (Tooley 1999, 32; Harris 1985b; Engelhardt 1986; Buckle 1988; Harman 2003). The classic argument from potential is that because we ascribe FMS to persons, and an embryo is a potential person from conception, therefore we should ascribe FMS to an embryo/fetus, but my account is slightly different, and unlike the classic account, does not ascribe FMS to the embryo. Rather, it proposes that the embryo's potential provides a *prima facie* reason not to kill, but that this is defeasible (though we might regret the killing). If a just *and* compassionate moral agent deems that the future interest of an embryo/fetus in enjoying the goods of life weighs less than the interests of current persons, they may be killed. However, there should be limits to their research use that are respectful of their minimum MS.

My first premise in the argument for potential as one criterion for MS is that around one-third of all embryos normally have the intrinsic genetic potential to develop into persons. The remainder are lost to spontaneous abortions.⁹ I have used the term person, rather than human being,

⁹ See Appendix 1 for pre-natal loss figure

to avoid being species-specific. Embryos have the genetic potential to become persons, assuming that the genetic basis for qualities such as rationality and empathy are controlled by the genome made up of DNA (Liao 2010, 164). If this is valid, it indicates that any entity with the intrinsic ability to develop into the kind of thinking, feeling being we have empathy with should have *some* MS.

The strongest objections to this premise are three standard objections to potential. The first is that there is no continuity of identity between an embryo and the eventual person (McMahan 2007), which I argued against in 3.2 above. The basis of my argument is that genetic identity *is* continuous, because the DNA controls development of the genetically-based qualities such as rationality and empathy that govern becoming a moral agent. The second objection centres over the ambiguity of the meaning of the word ‘potential’. There are at least two separate meanings to potential, which have variously been termed active or passive (Gómez-Lobo 2004b; Dwyer 2011), strong and weak (Stone 1987b), or as Stephen Buckle terms it, “potential to become” and “potential to produce” (1988, 233), and each reflects different kinds of moral theory. “Potential to become” considers that respect (or MS) is due to an entity because it is the very same being as it will potentially become (they share continuity of identity). “Potential to produce” (or weak/passive potential) focuses on more distant future outcomes, so attaches moral significance to whatever has the potential to produce certain consequences (Buckle 1988, 233-4). This latter interpretation encompasses a very broad sense of potential, more like “possibility”, and there may be several options. Everything is potentially many things: a house may become a pile of ashes, as Jim Stone notes (1987b, 818), illustrating that we claim A is a potential B even when it will not be identical to it. An embryo/fetus can be seen as a potential person, abortus, experimental subject or pet food: there are several possible paths to their development. Stone calls instead for a strong reading of potential, otherwise the potential argument could extend to somatic cells produced for research (Charo 2001, 83), or distant future generations (Warren 1977, 289). I agree with Stone that there must be a strong relationship between the potential entity (X) and the entity itself (Y), so that it is the normal and usual course of development for X to become Y. However, while I maintain that

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this is true of the embryo and person, others stretch potential back too far in an argument I consider mistaken.

R.M. Hare argues that as life is a continuum, and both gametes are living material, there is no logical reason why potentiality should begin with zygote formation, it may extend back to the egg and sperm. Hare's *reductio* argument formulates the Potentiality Principle, which states that if it would be wrong to kill a person because he has a certain property, it is wrong to kill an organism (e.g. an embryo) that will come to have that property if it develops normally (Hare 1999, 62). I disagree that potential extends back before syngamy, because there is a material difference between gametes and an embryo. Only 23 chromosomes are assembled and the potential to develop into a person is absent unless two gametes fuse (Gómez-Lobo 2004b, 202). I think Hare's interpretation is one of passive potential, and there is only a distant chance of these gametes producing a person (Tooley 2012, 135-6; McMahan 2007, 187). By contrast, I follow Gómez-Lobo in considering that an embryo has active potential to become a person, an internal power requiring no external agency as there is no change of substance after the gametes merge and form a zygote (2005, 106-108). Whilst I consider that two gametes have a distant potential to *produce* an embryo, given the confluence of several external interventions, the early embryo has the genetic potential to *become* a person. Whether or not the embryo twins may affect their continuity of identity, but even if it does, there remains a genetic continuity with the original zygote. It is the natural teleological development of the embryo that counts. Hare wrongly assumes that there is no difference between the potential of gametes and zygotes. The likelihood of a gamete to produce a person is infinitesimally smaller than a zygote's; it is only a vague probability (Noonan 1970, 56-57), and depends on external intervention (sperm meeting egg), whereas the zygote has the *telos* or natural ability to develop, once it has implanted safely.

The claim to potential of an embryo is stronger than that of gametes because they are one and the same object, rather than two separate objects. However, Singer and Dawson argue that there is no reason why an entity with potential must consist of a single object; for example, the statement that Montgomery's army has the potential to defeat Rommel's, made before battle, is valid despite an army comprising thousands of individuals (1988, 98-99). Even if the fissioning

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cells of the early embryo are not one individual, their potential may pass on to the one who becomes an individual. However, while this may be true under a “potential to produce”, it is not under the stricter requirement of “potential to become” – there must be an internal drive to develop. Buckle points out that armies can form complex wholes, as do the sperm and egg separately. However, before syngamy there is no individual possessing the necessary conditions of the “potential to become”, which are complex unity and overarching organisation (1988, 238). Two discrete entities cannot share a single potential.

Stone notes that ‘[p]hilosophers often dismiss the appeal to the fetus’s potentiality by enlisting a notion of potentiality so vague that everything is potentially everything else’ (1987b, 828). Such distant potential cannot substantiate a criterion to contribute towards MS. This is true of gametes and processes of embryo production that do not involve fertilisation of the egg by the sperm. It is also true of artificially induced potential to become a person, such as that envisaged with Tooley’s kitten (1999, 31) or McMahan’s Superchimp (2002, 147), whereby the capacity to develop advanced cognitive capacities is introduced through some imaginary wonderdrug or gene therapy (respectively) and is not an intrinsic potential. In my view the potential criterion does not apply when the potential is artificially induced rather than genetic, though there may be other grounds on which to ascribe some MS. Tooley (1999) asserts that it would not be a wrong to inject the kitten with a killing drug instead, because the possibility that it could transform into a person does not mean it has a serious right to life. Similarly, if an embryo has not yet developed the properties which give it the right to life, Tooley holds that there is nothing wrong with preventing these properties developing by killing it. He holds that a right to life cannot be justified by a future property it will develop (1999, 32).

There are two major objections to Tooley’s kitten argument. His premise that it is not wrong to kill a kitten fails to consider that harm can be done to animals; it is a moral wrong to torture or kill a living, sentient creature for no good reason. More importantly, there is a key difference between the kitten and an embryo. Before the kitten is injected, it has no intrinsic genetic potential to become a person, whereas an embryo does. Stone (1987b, 828) rightly denies that Tooley’s

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kitten would have strong potentiality, because if the kitten developed normally, it would not produce a human animal (also Hershenov and Hershenov 2015).

Marco Stier and Bettina Schoene-Seifert (2013) argue that it is time to give up on the potential argument, because research now shows that '[b]y converting a skin cell into an iPSC, and by subsequently assisting *this* cell via tetraploid cells, it is ultimately possible to develop a newborn from a normal skin cell' (2013, 22). The claim that a newborn would result is not proven because it is currently illegal. Technically, they claim, all fertilised egg cells, iPSCs and skin cells are 'baby pre-cursors', requiring those arguing for identity preservation potential to prove the claim that only the fertilised egg cell is relevantly identical to an infant, and that only this is numerically identical to the later child. Like a house turned to ashes, skin cells and iPSCs are not numerically identical to the later child. This compares with the fission problem in twinning,¹⁰ which Stier and Schoene-Seifert think makes the continuity argument highly questionable anyway. All potentials can be described as producing human beings if the necessary conditions prevail, though pluripotent and unipotent cells need more external triggers than usual. Even in natural reproduction, 'innumerable triggers are needed again and again to keep the embryonic machinery running' (Stier and Schoene-Seifert 2013, 23-4), so if external biochemical triggers are identity-compromising, this also occurs naturally.

However, David Hershenov and Rose Hershenov argue that embryos created specifically for research by reprogramming skin or other somatic cells, or synthetic human entities with embryo-like features (Aach et al.2017) (not discarded IVF embryos), would not qualify for any MS through this criterion as their normal pattern of development without external intervention denies them any potential (Hershenov and Hershenov 2015, 269). I agree with this for the same reason that I reject Tooley's kitten argument: it is not an intrinsic potential. They further argue that technologically altered cells do not have morally relevant potential (as opposed to the wider

¹⁰ See glossary (fission) for explanation of twinning problem

‘possibility’ meaning of potential that is not morally relevant) to become persons: their natural course would be to replicate other somatic cells without external stimulation.

Potential, by which I mean the intrinsic genetic potential to become a person in the course of normal human development, does not seem to me to apply to cells that could develop into a person if inserted in a surrogate trophoblast, iPSC or SCNT cells, or any other reprogrammed cell types. These cells have no intrinsic genetic potential to develop into persons through their own immanent power, they lack even the distant possibility presented by gametes of “potential to produce”. If an entity naturally (or through medical interventions such as IVF that do not alter its normal genetic path, or mitochondrial replacement techniques that ameliorate its natural genetic chances of survival) might become a paradigm bearer of FMS, then we have a small but increasing obligation to protect it.

The third argument against potential states that it is not right to treat something with the potential to develop into a person as if it already has attained personhood. As Harris memorably phrases it, we are all potentially dead, but would not want to be treated as if we were already dead (1983, 223). If X is a potential Y, then it is not Y (Engelhardt 1986, 142), and ought not to be treated equally to Y. If fetuses are only potential persons, then they are not persons, and they do not have the rights of persons. This is logical, and I do not consider this an objection to my potential argument, as I do not claim that potential demands equal treatment to those with FMS. However, Gómez-Lobo disagrees, holding that Engelhardt’s second premise that X is not Y is faulty, as it depends what Y stands for – whether it is a phase sortal (a temporary phase, such as infancy, through which an entity passes in its life) or a proper sortal (an absolute category) (2004b, 205). Gómez-Lobo holds that personhood is a proper sortal, a fetus either is or is not a person (and in his view it is), therefore he considers that Engelhardt’s conclusion that a fetus is not a person if it is a potential person to be mistaken (Gómez-Lobo 2004b, 205-6). In my view, human development is a continuous, gradual series of changes throughout life, and treating all stages equally when a fetus may bear less resemblance to personhood than many members of the animal kingdom risks injustice. Bertha Manninen (2007) suggests that there may be circumstances in which a potential X should be treated equally, if such treatment is a benefit for the potential X and a denial of the

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moral right would be harmful (Manninen 2007, 7). She gives the example that in the USA, people take out health insurance when they are not actually ill, in order that they might get future treatment should they need it, because they have a welfare interest in receiving treatment (2007, 5). While her example shows that potentiality enables entities to be treated with greater respect due to their future prospects, I would take issue with granting them equal moral rights.

Logically, if the embryo is of equal value to a person, then Toby Ord argues that we ought to be ploughing money and research into trying to prevent the high percentage of embryos lost through spontaneous abortion, a number 30 times higher than all forms of cancer (2008, 15). Ord asserts that though we might think embryo loss regrettable, it is not one of the world's major health issues because the claim that FMS begins at conception is held by relatively few (2008, 19). No potential person has the rights of a person (Singer 1993, 153), but though we should not grant equal MS to persons and potential persons, we ought to take their potential into consideration in the way that they are treated currently. We do not treat someone paying medical insurance as if they are already ill, and we do not treat Prince Charles as though he were already the British King (Singer 1993, 153), though he is given additional police protection in view of this potential.

This leads to my second premise, which is that embryos with intrinsic genetic potential ought to be treated not as objects, but in an appropriate way according to their reproductive or research function (to be discussed in 3.5.4). This may obligate us to treat them differently to an entity with similar current capacities, but who lacks person potential. Any living embryos formed by egg and sperm should be ascribed a minimal level of MS. Such a low level would not prohibit their destruction, but it would require moral justification for it. This should weigh all the criteria present. Dwyer argues that any reproductive embryo has active potential to develop morally important characteristics such as sentience and higher cognitive functioning which contributes to the very low level of MS that ought to be ascribed to an embryo (Dwyer 2011, 74). I would modify this claim to a precautionary one, that because many embryos have such potential, we should extend minimal MS to all reproductive embryos. Additionally, a low MS ought to put limits on ways we use research embryos so that their loss of a valuable life chance is acknowledged (showing regret for their future). Their destruction or misuse ought not to be permitted as a matter of course, but

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may be acceptable if there is sufficient moral justification. This might include research likely to medically benefit many currently existing people, but not for prudential reasons. An embryo should not be treated like a mere object at this stage: we should avoid trading them or using them for any trivial purposes, because though they are not yet a person, they might develop into one, and since the abolition of slavery, we do not trade in persons (Human Rights Act 1998, s.4).

The embryo's intrinsic genetic potential to become a person does not ascribe a right to life, but it does ascribe a right to moral consideration through the valuation principle whereby the value of an entity is related to the value of what they can develop into (Tooley 1999, 30). Harris himself writes 'the potentiality of something, or some things, has moral importance on the assumption that actualizing (sic) a particular potential is what matters' (Harris 1999, 299-300). He also makes the valid point that such actualisation of potential is not always achieved through human reproduction. He considers that utilising embryos for research is of comparable moral importance to that of natural reproduction (Harris 2003, 363), making an important point about the value of research. Potential is either interested in end states (becoming a person) and must involve protection to enable it to reach that end state, or it should not be wasted because there are powerful moral reasons to avoid waste of an embryo that could do good (the Waste Avoidance Principle), according to Harris (2003, 362, 368-9). He further justifiably argues that we ought to find different ways of doing this while matching the obligation to the needs of the entity, even if that does not extend the same protections. I agree that we need to consider not only how to value an embryo's potential to become a person, and what our obligations are to them, based on what their needs are at any given stage, but also (where the embryo's progenitors choose not to permit further development) the embryo's research potential to ameliorate life-threatening and life-limiting conditions. Where this is of value to currently existing people, a virtuous agent would consider it just to avoid wasting such research potential.

In conclusion, intrinsic genetic potential to become a person should be one of the criteria for multi-criterial MS. The motivating virtues of compassion and justice must be used to honestly consider and weigh the claims of the weaker party (the embryo/fetus) in the light of all extrinsic considerations. If a woman wishes to have an abortion, moral agents should weigh the woman's

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right to bodily integrity against other options for the embryo, such as adoption, or the likely scenario with their future treatment if abortion is refused. An embryo/fetus has, *prima facie*, a minimal moral status based on their life and genetic potential, and in an ideal world would be given the opportunity to develop. However, in weighing up the path that leads most to human flourishing, life itself is a worthwhile end, and the close attachment between parent and offspring can be a constituent factor. However, calculating whether this is likely under the prevalent circumstances, or whether deprivation or even cruelty (if the resentment of the reluctant parent were to result in child abuse, for example) requires the exercise of justice and empathy for both the woman's situation and the potential child's, and a decision based on the best overall outcome. What has not always been sufficiently considered is that embryos donated for research are surplus to their progenitors' reproductive requirements. They may still have intrinsic genetic potential, but external circumstances prevent any possible valuable future, unless some organisation steps in to finance and organise surrogate mothers to give birth to the surplus embryos, as well as shouldering the considerable burden of raising children in a loving and nurturing environment until adulthood, which is not likely. Nevertheless, I contend that these embryos/fetuses ought not to be treated as valueless because they do have intrinsic value for important research. However, potential is not sufficient as a standalone criterion, only in combination with others.

3.5.3 Relationship

MS depends on the presence of both intrinsic and extrinsic relational criteria, as Warren contends, such as social, emotional and biosystemic relationships (1997, 122-147). MS is, after all, a social construct, therefore it is logical that extrinsic factors contribute towards its ascription. However, attempts to build morality solely on social and ecological relationships (Callicott 1989) or on the Ethics of Care (Noddings 1984), while providing important new insights, have not succeeded in replacing a convincing account of MS. Extrinsic factors can play a large part in how we ascribe MS, for example, we are likely to consider that we have stronger obligations towards animals that we co-habit with than those in the wild.

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Some feminist care ethicists argue that the MS of living things always depends on our personal and emotional connections to them (Gilligan 1993, Noddings 1984). However, for “relationship” to be a factor in our moral consideration of an embryo, we must be aware that the embryo is in existence, so this cannot apply to the very early embryo (unless created through IVF), and is inapplicable to embryos donated for research.

Maternal-fetal relationships are not considered by Noddings in her *Ethics of Care*, her concern being with conscious relationships between the one-caring and the response from the cared-for. However, she does admit that as the embryo becomes a fetus, if the ‘information speck’ is a product of love, then sacredness can be conferred to it as well as a growing conviction that it must be cared for (1984, 88). There are few more physically intimate relationships than that between a woman and a wanted fetus that is developing within her, and there are tensions that may arise. For example, some mothers will not refrain from actions that may harm the embryo/fetus such as smoking, drinking or taking drugs (and unless she is actively trying to become pregnant, she may unwittingly consume harmful substances whilst still unaware of the pregnancy), despite certain government incentives like gift vouchers for quitting smoking (NHS Choices 2015). A woman with mental capacity retains her autonomy and right to bodily integrity, and has the right to refuse a Caesarean section, for example, regardless of whether the fetal life is in danger (Fox and Moreton 2015). But the ethical question underlying this choice is whether the relational responsibility the woman has to her sentient fetus means that she is obligated to save their life. Women often forego their own choices and pleasures in order to give their offspring the healthiest start in life that they can, subjugating their own desires for the sake of something not yet conceived in some cases, by taking folic acid for example. This suggests that some moral consideration is felt towards an embryo even when the relationship is temporally distant.

A couple undergoing IVF treatment is likely to be aware of embryonic existence and implantation at a much earlier stage than most pregnancies are detected. This is an arduous process, and embryo creation is the sought-after outcome, involving major investments of time, and money, and risk to health for the woman, so participants are likely to consider that their embryo has MS and would demand that everything possible be done to enable that embryonic life to thrive, because

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they care about their survival. As a principle, it would be wrong to consider that their particular embryo had any higher intrinsic claim to MS than another embryo at the same stage of development (which would usually be minimal, unless a conceptionist view is taken), given that MS is universalisable. In the circumstances, it seems reasonable that medical staff should respect gamete donors' attribution of MS to the embryo, due to their mental and physical investments in their potential.

However, there are limits to which relationships should contribute to MS, particularly in the early stages. Warnock questioned whether in the calculus of pleasure and pain, anyone measures the feelings of outrage suffered by those who oppose on moral grounds the use of embryos in any research (1987, 7). The lack of universal moral feeling on any given subject presents difficulties with taking all views into account. Public consultation carries the risk, particularly in a world influenced by social media, of paying heed to some very mistaken and possibly misinformed public opinion. Warnock's outraged person might be a pro-life supporter trying to claim that being genetically related to an unborn embryo (though not as a progenitor), or having a relationship of care towards them, should give him the right to ascribe greater MS to that embryo than the pregnant woman seeking abortion has, for example, but it would not be just to weight his opinion equally with that of the progenitors. It is the closest personal relationships that matter: the progenitors whose lives are likely to be impacted by the arrival of a new life they are responsible for.

Objections to MS being ascribed on the grounds of special relationships have been made by Jaworska and Tannenbaum (2018 s.2.4), who claim that MS is independent of other facts, such as special relationship between a child and parent. However, they refine this elsewhere, suggesting that ability to participate in a person-rearing relationship may be a key to higher MS (Jaworska and Tannenbaum 2014). Common sense intuition leads most of us to believe that there are certain people to whom we do have special obligations – our children or parents, friends, benefactors, pupils, or patients, for example. Though some classic utilitarians cast doubt on common sense intuition that once endorsed such ills as slavery (Chan and Harris 2010, 65), others suggest intuition can be used correctly (Singer 1993, 245-6), particularly for close relationships: 'we believe that we ought to try to save these people from certain kinds of harm, and ought to try to give them certain

kinds of benefit' (Parfit 1986, 95). McMahan agrees that '[s]ome relations – such as the parent–child relation – are widely recognized (sic) as intrinsically morally significant' (2005, 361). It is morally worse for a parent to kill their own child than for a stranger to kill a child, as it is a breach of the normal protection given by parent-child relations. The Ethics of Care considers that such partiality is not only to be acknowledged, but focuses on relationships as integral to its philosophy, 'the ethics of care starts with the moral claims of particular others, for instance, of one's child' (Held 2006, 10; similarly Kittay 2005). MS is ascribed for the sake of the entity itself, and a compassionate virtue ethics view of the relationship between a potential parent and much-wanted embryo/fetus would suggest that this embryo has an additional reason to expect a valuable future, a relationship bond that has already been created.

Although close relationships may carry additional obligations to those owed to strangers, this depends on the implications (Parfit 1986, 95). It is not absolute, and depends on the seriousness of the danger – no one ought to prioritise treating their child's bruise over saving a stranger's life, because duty to intimate relations does not override doing greater good to a stranger. However, it would not be unreasonable for a woman undergoing IVF to feel a strong bond to a much-wanted embryo that has just been implanted, and for her to wish to protect them. Such an embryo, even at this early stage of development and though highly vulnerable to pregnancy loss, would have a higher claim to minimal MS than research embryos. In pragmatic terms this means that the onus is on medical staff to give the best advice available to try and ensure the survival of the embryo. This overlaps with a duty of care to the patient, and is usually seen in these terms rather than as an obligation due to the status of the embryo. However, close relationship does seem to produce a substantial reason for rendering moral protection to an embryo, and while not sufficient as a sole criterion, it is a contributory factor in combination with other criteria to ascribe a minimal MS.

3.5.4 Function

The function of an entity within a moral community may also contribute, in combination with other criteria, to its MS. For example, a guide dog for sight impaired people can access shops and other places where most dogs are not permitted. Whether the embryo is in a petri dish, the fallopian tubes

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or successfully implanted in the uterus is sometimes thought to make a difference to their minimal MS, but this is due to their function rather than their location. An embryo may be *in vitro* as part of the ART process before implantation, or because they have been donated for research or therapy. Provided that these embryos were generated from both male and female gametes (so that their natural potential is to produce a person), there is no distinction between their intrinsic value. Both are living and have genetic potential. The difference is extrinsic.

The aspect of its location that is relevant to MS is what that environment indicates about the future chances of development for the embryo. Any embryo not implanted does not currently have long-term prospects of survival: even if artificial womb technology made it physiologically possible for an embryo to completely develop *in vitro*, all research embryos legally must be destroyed after 14 days' development (Human Fertilisation and Embryology Act 1990, s.3(4)). In effect, no research embryo will be given the opportunity to fulfil their potential to become a person, for though both the research and implanted embryo may share a minimal MS, our obligations towards each will differ. The ambiguity of the embryo, the effect of their destiny, and how the value put on the life of an embryo varies according to individual perceptions has been noted by others (McGuinness 2012, 58; Haimes et al 2008, 116-118). People unable to reproduce naturally are likely to view each embryo as a precious and much-wanted resource (Haimes et al 2008, 116-117). Someone with no reproductive desires, or who considers that the world is overpopulated, is unlikely to value them greatly. Whether they are a source of therapeutic stem cells, a research vehicle, or a future baby, the value of embryos is thus heavily context-dependent, and bound up with their valuable future.

McGuinness believes that this purpose can affect what it is acceptable to do to them, she asserts that '...functionality can play an important role in the levels of respect that we believe an embryo deserves and this functional distinction is now enshrined in the Human Fertilisation and Embryology Act 2008' (2012, 62). Certainly, an aborted embryo loses all MS. If they had a minimal claim (as I maintain, on the basis of their life and genetic potential), it was trumped by the higher MS of the pregnant woman. Embryos created through IVF treatment and then discarded either because surplus to requirements, or not of the quality required, also have little or no extrinsic

value. They lack a special relationship and do not have a function. Whether the frozen embryo has any MS is more problematic: cryogenic preservation suspends life as we normally define the term. Again, whilst we cannot consider them as moral subjects with a valuable future until and unless successfully implanted, they still possess a minimal intrinsic value based on genetic potential if still alive. Arguably they ought not to be used for morally unimportant purposes. But it appears that an embryo's intended function in life does change their value to society.

With *in vitro* embryos, another consideration is whether the embryo is legally permitted to be implanted into a woman's uterus or not, dependent on the method of construction, as this will make a difference to whether they will ever be able to lead a valuable future. We could test our intuitions on whether this matters by adapting Liao's 'Fire in the Embryo Laboratory' thought experiment (2006) again, as originally referred to in 1.2.3. If you are caught in a fire in a reproductive techniques laboratory and have a choice between saving one of two clearly labelled jars of human embryos, one filled with embryos created by SCNT (thus not legally permitted to be implanted), and one filled with embryos created by IVF, would we have any moral obligation to choose the embryos with a potential future as a person? Those who understand the difference between the labels might well choose the IVF jar, provided that their rescue did not require further risks to health and wellbeing. This would place reproductive value above research. However, it could be argued that the beneficiaries of the rescue would be the potential parents, not the embryos themselves, despite the effects on their possible future lives.

McGuinness notes that 'how the embryo is created can affect the level of legal protection it is afforded' (2012, 53). It also affects our moral obligations towards them. The changes in the legal definition of the embryo between the Human Fertilisation and Embryology Acts 1990, (s.1) and 2008, (s.1), intended to prevent the circumventions of the law that had been occurring in the way an embryo was created, defined the forms of embryos that could be permitted to be implanted, and under what circumstances, and what type of embryos could be created for research (McGuinness 2012, 69). Now, this clear guideline has defined embryos that *may* physically have the potential to become a person, but that will never be permitted to do so as their mode of construction makes it illegal to implant them. This could lead to a second class (research) embryo, one that is artificially

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created, not formed from sperm and egg. Such embryos might be utilised for more and more legally borderline experiments. The permitted/not permitted categories show that:

...law has effectively contained the subversive challenge of the embryo by classifying some as potential legal persons and others as mere research material. In so doing, law not only contains the liminality of the embryo but reifies the pre-existing legal categories to which it is assigned (Fox and McGuinness 2016, 210).

There is a clear dividing line in the classification of those embryos whose potential will be curtailed by research use as property, and those whose potential will be permitted to develop further. Extrinsic conditions mean that artificially created embryos (e.g through SCNT), despite having the intrinsic values of life and possibly genetic person potential (though this cannot legally be confirmed), lack all MS as manifested through the law in the UK. McGuinness points out that we have long treated reproductive and research embryos differently: it is legally permissible to experiment on IVF embryos as they will be destroyed after fourteen days, but not on embryos to be implanted with the hope of achieving pregnancy, for fear of abnormalities (2012, 61). Functionality thus plays an important part in how we value an embryo.

Function fulfils two of Sumner's conditions for criteria: it can be independently ascertained, and it is applicable in other contexts and to other entities (1981, 32). However, some might still object to it as a criterion. Opponents might argue that it is not morally relevant, that is to say that function lacks any plausible connection with the possession of certain moral rights. With life, the teleological impulse to develop and grow gives the entity a welfare that is arguably morally wrong to end; sentience is a criterion that enables the perception of pain, and to inflict pain deliberately on such an entity would be morally wrong (Sumner 1981, 32). Having a function does not naturally lead to such a conclusion. This depends on what kind of function is under discussion. When the function is important to further the wellbeing of a community, such as enabling someone with a disability to lead an independent life, or to enable parenting projects, or for hESC therapy, then I

maintain that function does have a moral role, and is a contributory criterion for MS, in combination with other criteria.

My focus in this section has been on the four criteria - life, genetic potential, relationship and function – that give reason to ascribe embryos/fetuses a minimal level of MS, so that they are neither treated as objects, nor ascribed the same level of MS as a sentient fetus. However, as the fetus continues to develop, other criteria may aggregate to increase the level of MS the fetus possesses, from sentience onwards.

3.5.5 Other criteria relevant to MMS or rejected

In Chapter One (1.5.2-3) I briefly discussed several other criteria that develop in the later stages of pregnancy, and that intermediate views consider may ascribe MS on a uni-criterial basis (which I disputed as sole criteria). However, as these criteria develop, I concur with Warren (1997) and Dwyer (2011) in considering that they add to the level of MS to be ascribed. Sentience, which is thought to occur roughly halfway through a pregnancy, is a major contributor to MS as its proponents (Sumner 1981, Warren 1997, Dwyer 2011) suggest, though I agree with Dwyer and Warren that it is a contributory criterion, rather than Sumner's view that it is necessary and sufficient as a sole criterion, because insentient entities may deserve MS. Certain psychological capacities denoting higher cognitive functioning such as consciousness and an interest in what is being done to you (McMahan 2002; Steinbock 1992, 15), as well as moral agency (Warren 1997, 156) are important contributors to MS. I shall assume that these additional criteria have been satisfactorily justified elsewhere (Steinbock 1992; Singer 1993, Warren 1997; McMahan 2002; Dwyer 2011). Together with two or more of the four criteria from my model, these strengthen and aggregate to increase the level of MS until the most stringent obligations of FMS should be ascribed. For the human fetus, I suspect that FMS starts near birth on a precautionary basis, but I shall not be attempting to argue for this. An infant may not possess all the qualities of personhood, but by this stage is so likely to do so at some future point that she should be fully protected. The greatest obligations of FMS should be ascribed to those beings with higher cognitive functioning

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(not necessarily human), however that is expressed: consciousness, interests, subjects-of-a-life, personhood, or moral agency.

Not all criteria discussed in the literature contribute to MMS for embryos/fetuses or human beings, but may be part of an MMS model for other marginal cases. The growing importance of the ecological case in a world feeling the effects of global warming, species loss and long-term abuse of the land surely merits further investigation into the specific obligations moral agents have towards the biosystem (Warren 1997, 166). I have also included Warren's Interspecific Principle, which ascribes greater protections to those of the animal kingdom to whom humans so often inflict harm without thinking. In Chapter Five these criteria will be used to show how my model of aggregated criteria builds MS, and to show how the relative MS of other marginal cases might compare.

However, I rejected Warren's Transitivity of Respect principle (1997, 170-172) in 3.3.1, because respecting other agents' attributions of MS even if not agreeing with it did not seem to justify ascribing MS to an entity. With diverse views, neither party is likely to be able to respect each other's attribution. There may be circumstances in which this principle is useful, but in application to the MS of the embryo, I do not think it would contribute anything to the discussion so I will not be applying it. Warren's Human Rights Principle (1997, 164-6) may well ascribe a further degree of MS to moral patients who seem to have been ignored by several other accounts, such as newborn infants and severely cognitively impaired people. While the most stringent protections against killing or harming should be in place, other elements may not apply, such as protection of their liberty: for their own safety they cannot be allowed to wander at will. This principle does weigh the balance towards the human species though, so I have not included it amongst the criteria used to map MMS for entities on the periphery of the moral community in Chapter Five.

Spatial location, whether the embryo is in a womb or petri dish, has been considered relevant when evaluating the embryo's MS (Kingma 2017). Scott argues that moral reasoning concerns relationships between members of society, and social visibility demands that we cannot reason about one that society cannot see (when *in vivo*) (2002, 30). A third party cannot be expected to

know of the existence of the embryo in the early stages of pregnancy without being told, therefore they cannot take any special obligations towards the embryo into account. Yet visibility cannot be morally vital. If someone had a sensory impairment and could not see or hear another member of society, they would still be expected to act reasonably towards another person. The pregnant woman has a sensory relationship with the embryo she is carrying. Although she is unable to distinguish movement much before sentience (quickening is not normally felt until around 18-20 weeks, though experienced mothers may feel it at 16 weeks (Royal College of Obstetricians and Gynaecologists 2012)), she may be experiencing other bodily changes due to the presence of the fetus. However, Eike-Henner Kluge doubts that location can make a moral difference, saying that to claim '*where* an entity is determines *what* it is' is doubtful, there is no argument that location in the embryo is ethically special, and I concur (1988, 208). He points out that no place other than a uterus can claim to have status-altering properties, which may currently be true. It is the only place where an embryo can develop a valuable future of their own, but if technological advances create artificial wombs, there could be no justifiable moral difference between those raised in an artificial womb or a real one, any more than there is currently with premature fetuses raised in an incubator. What Kluge thinks is more relevant is that an embryo/fetus is dependent on the biological support mechanism that is the gestational mother. It is not about location, but about life support (Kluge 1988, 208). With regard to embryos, their location can be an indicator of their function – whether they are to reproduce or be used in research, and function is more directly relevant as a contributory criterion.

To summarise, I have concluded that there are four contributory criteria for MS in the embryo and pre-sentient fetus: life, genetic potential, relationship and function. Other criteria in the literature may contribute to MS from sentience onwards, but they are not applicable to pre-sentient embryonic development, which is the limit of this study. I will now turn to the moral obligations ensuing from MS.

3.6 Obligations of moral status

The term obligations is often related to contractarian or utilitarian moral theories, and may be thought to be out of place in a virtue ethics framework. Hursthouse and John Hacker-Wright (2007) both consider that virtue ethics can provide action guidance, usually in the form of a virtue generating moral rules (Hursthouse 1999, 17). The aim of this thesis is to discover how we ought to treat embryos/fetuses, and obligations is used in this sense, to express what moral agents *ought to do* in positive terms: our moral responsibilities. Jaworska and Tannenbaum (2018) phrase it in terms of the moral prohibitions that ascription of MS denotes in their thorough explication. FMS involves ‘a very stringent moral presumption against interfering with the being in various ways’ (Jaworska and Tannenbaum 2018, s.2). This comprises a duty not to cause pain, to refrain from killing, not to subject them to experimentation, or to cause loss of liberty. This exists whether or not such interference results in any harm done, and it can only be overridden in special circumstances. If interference happens, not only is the action wrong but the being is wronged. They note that some philosophers (Jaworska 2007, Quinn 1984) consider that we have two further duties: a strong reason to aid and a strong reason to treat fairly those ascribed MS (Jaworska and Tannenbaum 2018, s.2.2 and 2.3), and I agree, though the former is less applicable to pre-sentient development.

3.6.1 Reduction in stringency for embryos/fetuses

Jaworska and Tannenbaum acknowledge that we do not have the same set of obligations towards every entity that has MS (2018, s.2.1c): the reason not to interfere with beings with FMS is stronger than the reason not to interfere with beings that have some, but not full, MS. A dog has some MS, an unimpaired adult human has FMS, and there are others (infants and individuals with severe cognitive impairments) that they argue have the capacity to participate as a ‘rearee’ in ‘person-rearing relationships’, which ascribes an intermediate MS (Jaworska and Tannenbaum 2014, 242). However, they consider that an embryo is on a par with an anencephalic infant, with negligible MS (2014, 269, n.48). Anencephalic infants lack most or all of their brain structure, and will die within days, though relationship is likely to be strong. However, an early embryo currently lacks the brain

system, but this will normally develop, and many have a valuable future in prospect, so there are important differences that render this comparison inaccurate, in my view.

For ascriptions of less than FMS, Jaworska and Tannenbaum outline three different approaches: first, you can vary the strength of reason to act (which I will outline in Chapter Four, 4.5), so that the stringent moral presumption might reduce to a strong or even a weak presumption. Secondly, while something with FMS must not be killed, with lower MS, the guide is whatever maximises the overall good (Jaworska and Tannenbaum 2018, s.3), which I will interpret in terms of justice and compassion. They note ‘lesser moral status might involve fewer presumptions against different types of interference’, for example, a presumption against causing pain, but not against killing (Jaworska and Tannenbaum 2018, s.3). Thirdly, there could be a combination of the two approaches whereby FMS requires stringent presumption against interference, a strong reason to aid and a strong reason to treat fairly, while the lowest degree would involve a weak reason of just one of these. This still gives more protection than the zero MS given to a fingernail, which can be treated as we wish with no ramifications (Jaworska and Tannenbaum 2018, s.3). My model is based on their combination approach, because it gives the flexibility of both reductions in reasons and reductions in levels, providing a wide range that can be used as appropriate.

There are certain obligations that obviously cannot apply to an embryo/fetus. The duty not to cause pain is irrelevant as an embryo/fetus is not sentient. Loss of liberty is inapplicable as an embryo/fetus’s location is fixed and their survival depends on the location’s ability to nurture and nourish, whether *in vitro* or *in vivo*. Given the developmental stage and location of the embryo/fetus, to fulfil a strong reason to aid would depend on the pregnant woman’s co-operation, particularly if it involves breaching her bodily integrity. It would be difficult to separate obligations to the woman from obligations to the embryo/fetus. There are unlikely to be even weak obligations to aid a fetus that pertain (or even a viable fetus, as Marie Fox and Kirsty Moreton (2015) point out). This leaves three potential obligations towards an embryo/fetus.

3.6.2 Strong presumption against interference

In principlism, which is a common ethical framework used by medical practitioners, a first principle is nonmaleficence (Beauchamp and Childress 2001, 113). Jaworska and Tannenbaum (2018) consider that moral presumption against interference where FMS operates is so stringent that it pertains even if interference does not result in harm. This presumption may be ‘overridden... when the lives of a very large number of others are at stake’ (Jaworska and Tannenbaum 2018, 2.1b), although they consider that there remains a moral taint, a regret for the interference, when the entity has FMS. This is a utilitarian view that McMahan might agree with if the number was sufficiently high (2002, 247). Virtue ethics will consider the circumstances and what is just. The benefits of hESCR may lead to greater flourishing lives for currently existing people, though regret for the embryos used should be expressed.

The criteria that justify a minimal MS for the embryo are outweighed by most other entities with MS, but do put limits on what kind of embryo research is morally acceptable. A compassionate agent would concur with Manninen (2007, 7) that we should consider whether a person would benefit from a particular treatment, or be harmed if that treatment is withheld. Therefore while we ought not to equate the MS of an embryo with that of a person, we must not treat it as negligible, although their only obvious “need” is the chance to continue developing. If a choice must be made between killing an embryo or killing a paradigm person, reason tells us that the person should live. A person has FMS so the most stringent presumption against interference pertains, with only a weak presumption for the embryo. There is no reason to demand equal standards of obligation to both persons and embryos: the two entities have very different capacities, and we should treat the embryo according to what is currently appropriate, not what their future capacities would deserve. If, however, the dilemma is choosing between two embryos, given that both share identical intrinsic value, the differentiating factor is extrinsic: whether there is a bond of relationship with gamete donors who have perhaps undergone hardships to reproduce, or whether one has been donated to research. There is another unknown factor: given the loss rate, which one has the greater chance of surviving to fulfil their valuable future.

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There are other dilemmas that pit two entities bearing equal MS against each other and call for a moral judgment to be made. In *Re A (Children)(Conjoined Twins: Medical Treatment) (No 1)* [2001] Fam 147, medical staff wanted to separate seven-week-old conjoined twins Jodie and Mary to save Jodie. Both were likely to die without the operation, but in operating to save the stronger twin, Mary would certainly be killed. As devout Catholics, the parents refused consent to separation; they viewed it as knowingly killing Mary, and appealed. The Court held that the appeal should be dismissed: the operation should be permitted under family law as the children's welfare was paramount, and they had to balance the best interests of each of the twins. The least detrimental choice was to permit separation as this would improve Jodie's quality of life and shorten suffering for Mary, showing that best interests do not merely include medical interests (Moreton 2017, 27). In exceptional cases the strong presumption against interference has to give way in order for justice to be done, and this showed compassion to the one with a valuable future.

Under virtue ethics, there can only be a weak obligation to refrain from killing embryos when there is sufficient justification to do so, and this depends on extrinsic circumstances. To protect every embryo would be an impossible task. In natural reproduction, choices are made about whether to continue pregnancies or legally terminate those unwanted due to unpropitious circumstances (such as threats to the woman's health), so there is no logic for this to change when embryos are created *in vitro*. There are few circumstances when a *stringent* presumption against interference is feasible for embryos, though it would be right to stop any unwanted intentional destruction of an embryo by a third party. However, compassion towards an embryo would be overshadowed by a primary obligation to the woman in whose uterus the embryo was situated, a person with FMS. Before individuation, it is highly unlikely that anyone would know of an embryo's existence unless reproduction was *in vitro*.

As we cannot tell the difference between embryos that have an actual future and those that do not, does this mean that the onus is on us to protect them all on a precautionary principle? If we took the view that it was morally correct to protect all embryos on the basis that one embryo in

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three has the potential to develop into a person,¹¹ this would imply that every spare embryo left over from IVF should be implanted in surrogates to give them a chance of life, and would prohibit embryo research whatever the purpose. I strongly suggest that this does not apply. There is only a weak obligation on us to refrain from killing embryonic life, as discussed above. Where it is *possible* that the embryo might have a valuable future, then killing them would be wrong unless an entity of higher MS is likely to benefit from their destruction, which is the case for both research and abortion.

Our obligations to spare embryos *in vitro* exclude extending every possibility for actualising their potential to become people, where required for reproduction. We do not owe every embryo the chance of life, though: it is not in our scope as moral agents. It is not just supererogatory, it is folly. Measures such as President Bush's financial support for Snowflakes 'embryo adoption' in the US (Ball 2005), which urged "adoption" of spare embryos that were less than perfect so that all have the chance of life, proved unpopular, demanded too much of a woman to undergo pregnancy to give life to other people's (possibly impaired) children, and under a gradualist view, over-values an embryo (Strong 1997a, 474). It ignores the fact that natural selection takes place and the majority of embryos will not survive in natural reproduction, even if given the best chance. A report calling for the recognition of differences between the embryo preimplantation and post-implantation points out that '[i]t should be clear that *in vivo* the embryo may perish, split into several entities, become neoplastic or progress outside the uterus, all of which prejudice its potential' (ESHRE Taskforce on Ethics and Law 2001, 1047). Research into this area might shed new light on why this happens, but re-implanting possibly damaged embryos would not right a natural wrong.

If killing embryos is always wrong, we would be obliged to change some of our contraceptive practices involving abortifacients, that prevent an embryo implanting rather than preventing their formation. Julian Savulescu (2002, 528) further points out that there are some

¹¹ See Appendix 1 for figures on pre-natal loss.

instances of killing an innocent that society accepts, when it is to save others: for example, reducing the number of fetuses in a multiple pregnancy or aborting a fetus to save the mother's life. We must consider the criteria that affect whether or not it is morally wrong, particularly any relationship or function. What we cannot do is look to the high natural loss rate of embryos and consider that it justifies deliberate killing of embryos as morally sound, as Harris (2003) points out. He is clear that there is no value in the argument that 'because embryos are produced only to die in natural procreation,... the killing of embryos must be morally sound' (Harris 2003, 365). However, there is a danger that the high natural loss rate of embryos, and the growing perception that embryos are of greater value as potential cures for a plethora of killer diseases, not as potential lives, could desensitise us to their potential, or at least change the way that they are perceived: as cures, not potential persons.

3.6.3 Not to subject them to experimentation

Savulescu (2002, 528) argues that, even if we assume that embryos are persons with FMS, deriving stem cells for research is defensible on the same grounds, saving others, so long as each embryo in the population has an equal and fair chance of being killed. This brings us to a key question: whether or not it is permissible to experiment on the human embryo/fetus at any stage. Stem cell technology stands to benefit everyone, therefore utilitarians argue that the destruction of human embryos is ethically acceptable to enable the long term benefits from the prevention or cure of many human diseases. Pluripotent stem cells are currently best harvested at around six days' gestation, and their extraction usually results in the killing of the embryo (McMahan 2007, 172). Unlike gene editing, where the aim is to improve that individual's life, experimentation on embryos is not usually for the benefit of embryos themselves (except in mitochondrial replacement techniques), but of others, though it does have a valuable outcome that is preferable to wasting the embryos.

Stem cells from embryos are used in research into devastating life-limiting diseases, biomedical research and stem cell therapies (Devolder 2015, 3-8). The Proportionality Principle, by which 'it is only morally permissible to destroy human embryos in research if the research

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serves an important purpose, such as a major health interest' (Pugh 2014, 421), has proved to be a reasonable guideline that is morally defensible. Where the research is important enough, it is worth overriding the minimal MS of many human embryos that are not required for reproductive purposes, and using their unique potential in research instead. However, where are we obliged to draw the line? I consider that the legal reasons for permitting embryo research as set out under UK law (Human Fertilisation and Embryology Acts, 1990, ss. 12-15 and 2008, ss.12-15), encapsulate the minimal MS of the human embryo and protect them for valid moral reasons. These are, in my view, first: they have potential for human life with a valuable future (DHSS and Warnock 1984, 90 dissent); second: their use should be avoided if there are any possible alternatives (Human Fertilisation and Embryology Act 1990, schedule 2, 3(6)); third: their use is validated when medically beneficial to those bearing FMS (1990, schedule 2, 3(2) and (3)); and fourth: that we cannot experiment on an entity that is *in vivo* (1990, s. 3(3)(a)).

Pugh doubts that the Principle of Proportionality is defensible; I disagree. He questions why destroying embryos in research carried out to address a major health issue shows moral respect, but destroying them for other purposes does not. If the goal of research is to be compatible with affording moral respect (or a minimal MS), then we must have a moral reason to pursue this goal (Pugh 2014, 425). While there may be clear-cut reasons (the example he gives is using hESC therapy to alleviate motor neurone disease symptoms versus using them in beautifying cosmetic surgery: a need versus a want), he doubts that a non-arbitrary line can be drawn between moral research goals and those that we have only prudential (want-type) justification to follow, given the difficulty that has arisen in trying to justify moral enhancement (Persson and Savulescu 2013). While not denying the difficulty of line-drawing, there is a pragmatic need for legal guidelines, and ongoing discussion around moral reasons for research is important. I will return to this discussion in Chapter Four.

Mitochondrial replacement techniques, which were legalised through The Human Fertilisation and Embryology (Mitochondrial Donation) Regulations 2015 (an amendment to the original Act), are only undertaken to prevent the inheritance of such serious genetic disorders that would be seriously debilitating or life-threatening to an embryo's future. It could be argued that

under the principles of non-maleficence and beneficence, mitochondrial replacement techniques under permitted circumstances prevent future harm. Mitochondrial disorders affect an estimated one in 6,500 children (Wrigley et al. 2015, 632), and the process used does not just affect the embryo/fetus concerned, but their germline, so all their descendants are affected. There are two methods in use, both of which involve invasive procedures, one before and one after fertilisation (Wrigley et al. 2015). As these processes leave the nuclear DNA and mitochondrial DNA intact, this might not involve genetic modification, according to the UK government, but it does constitute interference of a fundamental nature (Wrigley et al. 2015, 632; Dimond 2015, 174). However, this may be a type of interference that is justified by the enormity of the benefits, as it enables couples who are at risk to have children to whom they are genetically related, and enables the children and their descendants, all things being equal, to live without mitochondrial disease and its life-limiting consequences. Far from it being wrongful interference, it is a compassionate correction of a 'natural' wrong.

If advances in technology and the law permit, there may imminently be benefits to treating an embryo *in vivo* after implantation. For example if the CRISPR-Cas 9 genome editing technique (or its equivalent) is proven to help eradicate major congenital conditions, we are more likely to advocate for changes in the law, because the embryo directly benefits and avoids suffering. Directly beneficial research and research that has important medical benefits for current persons are both courses of action that a virtuous moral agent would endorse, because they comply with the virtues of compassion for the recipients, and are just in distributing the benefits fairly.

3.6.4 A reason to treat fairly

If all beings with FMS matter equally in decision-making, then there is a strong reason to treat fairly (Jaworska 2007). This would require all to benefit similarly, *prima facie*. This then may be translated into a weak obligation to fairly treat two embryos with equal but minimal MS, and which would complement the virtue of justice in distribution of goods. Savulescu's ES cell lottery scenario (where it is permissible to kill one innocent entity to save another in a scenario where both cannot survive) argues that in some circumstances we would prefer a world in which innocents are

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killed for the benefit of others, so long as our chances of living increase overall, and so long as there is a fair chance of benefiting (2002, 523). He further argues that permitting embryos to be frozen then later destroyed is a ‘twisted version of respect for human dignity’ (2002, 529), we should use reason to choose longer and better lives for more people.

A more important way to treat embryos/fetuses fairly would be to ensure that the loss of their valuable future is balanced by the importance of the goal of the research for which they are used. Though the embryos will never know or care whether they have been treated fairly, a moral society should. Therapeutic use would qualify, but consuming them (if it were to be discovered that ingesting stem cells prolonged skin beauty, for example) or trading in them does not, it lacks a moral motivation. We should be guided by the thought of how a virtuous person, who is motivated by characteristics of justice and compassion, would act.

3.7 Summary

In this chapter, I have argued that the multi-criterial approaches of Warren and Dwyer overcome the drawbacks of sole criterion theories of MS that prove too inclusive or exclusive, and give us a more adequate tool-set for moral consideration, bringing more flexibility, range and compassion (Warren 1997, 241). However, multicriterial views have so far failed to delineate exactly how many criteria are necessary, and how the various complex considerations should be weighted. This demonstrates the need for a re-evaluation of the concept.

Many philosophers have argued that the embryo/fetus is not the kind of entity to which MS applies, because there is no continuity of identity whatsoever between an embryo and a person, therefore an embryo is not a potential person. I argued that while McMahan’s embodied mind account of continuity may be true for persons, and numerical identity does not always prevail in cases of twinning, there is genetic continuity between the embryo and eventual person, and genes govern whether or not a person may develop. I then argued that there are four criteria relevant to the embryo/fetus, which in combination may ascribe a minimal MS: two intrinsic criteria are life, and genetic potential to become a person. Extrinsic criteria that may contribute to MS are

relationship and function. I then gave my reasons for rejecting Warren's Transitivity of Respect criterion, and that of location. I briefly discussed criteria that I consider will become pertinent to the fetus in later stages of human development, other criteria that may be pertinent to wider considerations of MS in animal and environmental discussions, and those I rejected. I make no claim that this is an exhaustive list of intrinsic or extrinsic criteria relevant to MS: there may be other factors yet to be discussed. MS is not restricted to humankind as several philosophers have observed (e.g. Callicott 1986; Singer 1993; Regan 2004; DeGrazia 2008), and it appears to be a far more complex and nuanced concept than many traditional views encompass, necessitating the selection of multiple relevant criteria.

However, in considering the myriad combinations of criteria that are applicable to different entities, we must come back to the key purpose of the concept of MS: to denote how we ought to treat these entities. In 3.6 I analysed the obligations ascribed to FMS and considered how these might apply to my subject. Levels of MS can be attributed in increasing (or decreasing) amounts that reflect the changes within the entity it protects as different criteria develop (or are lost). The concept seems to me to demand flexibility, both in the strength and types of protection it endows. As human life is a continuously developing process, we ought to ascribe a level of MS suitable to the entity's stage of development. In Chapter Four I will propose a way to re-evaluate MS, by ascribing it in levels as multiple criteria aggregate or a particular criterion may strengthen. I will then suggest how these levels of MS might relate to the obligations moral agents have towards them.

CHAPTER FOUR: PROPOSING MULTI-CRITERIAL MULTI-LEVEL MORAL STATUS

*'The challenge, then, is to construct a theory of moral status that is neither arbitrary (like the biological humanity criterion) nor unduly restrictive (like the person view).'*¹²

4.1 Introduction

In this chapter, I will argue that MS should be ascribed on the basis of multiple criteria, which develop, strengthen and aggregate at different stages of gestation, requiring different levels and types of obligation. In response to Steinbock's challenge in the chapter heading quotation (above), I will present a new model of multi-criterial, multi-level MS (MMS). My model reflects the intuition that many of us have that the embryo ought not to be denied *all* the protections that MS endows, but nor should they be treated equally to a fully developed person. I have argued that the standard argument - that every innocent human being has a right to life (UN General Assembly 1948, article 3), and that as a human embryo is a human being, therefore they have a right to life (CDF 1987) - is inadequate as a basis for establishing MS, as I have demonstrated in Chapter One (1.2.2). This is because although a human embryo is a member of the human species, it is not simply *being* human, but having the mental capacities of a typical human, that ground that particular right (Kuhse and Singer 1990, 69-71). However, lack of a right to life grounded in this particular way does not establish that embryos ought to be treated as objects. Instead, a rational middle ground will be proposed that is not based on rights or a single necessary and sufficient criterion, but on balancing multiple criteria with multiple levels of MS related to the degree of protection appropriate. MMS is neither arbitrary; because it is based on rationally justified criteria, nor restrictive; because its flexible criteria and tailored protection can be applied to any entity.

¹² Bonnie Steinbock (2006) The Morality of Killing Human Embryos. *Journal of Law, Medicine and Ethics* 34(1) 28.

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Discussion of the MS of pre-sentient human development is relevant because if an embryo/fetus has no MS, then neither abortion nor hESCR would require any moral justification whatsoever (Harman 1999, 312). There would be no moral limitations to gene editing, or indeed any treatment of embryos/fetuses that concerned their immediate welfare. In 4.2, I will propose re-evaluating MS through my MMS approach; a variation on the multi-criterial approach discussed in the previous chapter (3.3), and which relates the active criteria (3.5.1-4) to the obligations pertinent to produce a particular level of MS. This model clarifies how we ought to treat an entity at that particular stage of development. I will make the case for my claim and outline the key advantages, among which are that it explains increases in status even pre-sentience, enables age- and stage-appropriate obligations, and can be applied to other entities on the periphery of MS. Next, in 4.3 I will argue that viewing MS as increasing in levels is more appropriate than an open-ended continuum of degrees, given that there are a finite number of ways that the obligations of MS can be applied. Finally, in 4.4 I defend MMS against possible objections to it, which are: complexity, creating a moral hierarchy (similar to the objections made of previous multi-criterial approaches) and lacking principle. I then summarise the advantages that this MMS approach brings in terms of increased flexibility, enabling development-appropriate treatment, and including other marginal cases.

4.2 Proposing MMS

My contention is that the concept of MS should be re-evaluated as multi-criterial, multi-level MS (MMS), as each level correlates with obligations that are appropriate for a moral agent to have regarding the entity under consideration. Both intrinsic and extrinsic criteria (those naturally present in the embryo as well as morally relevant external influences) should be considered by the moral agent when weighing up what is the right (or virtuous) action to take and which obligations should apply. As presented in Chapter Three, intrinsic criteria relevant to the embryo/fetus are life and genetic potential to become a person, and extrinsic criteria are relationship and function.

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Changes to the concept of MS are needed to avoid the problem of MS being either too exclusive of morally significant entities, such as the embryo/fetus, or over-stating our obligations to them by ascribing FMS to embryos. Current multi-criterial accounts ascribe ‘only a modest moral status’ (Warren 1997, 204; Dwyer 2011, 131) to all pre-sentient human development, despite the vast changes that occur from syngamy to the recognisable fetus that may survive if born prematurely at 24 weeks.

The demands of rule-based or consequence-based moral theories on how the embryo ought to be treated have led to an impasse.¹³ Either the same safeguards that are applied to developed persons apply to embryos, or no moral safeguards are considered relevant, respectively. Hursthouse argues that approaches based on these normative ethical theories need to know what to apply its principles to, for example, what kind of entities it is wrong to kill, and should also avoid ambiguity by specifying whether MS is threshold, a matter of degree, or ‘whether there can be things with different but incommensurable moral status’ (Hursthouse 2013, 3425). Hacker-Wright also considers that MS has been misconceived by deontological and consequentialist approaches as well as multi-criterial approaches (such as Warren’s) (2007, 450-1). In his view, this leads to serious wrongs in accounting for mistreatment of particular entities on the peripheries of MS, such as severely cognitively impaired people or seriously under-developed humans (Hacker-Wright 2007, 450). While agreeing that there are unacceptable consequences to each of the previous approaches, in my view the multi-criterial approach has the advantage of offering the more differentiated approach required, although I will argue in the section following that further refinement to levels of MS rather than a continuum is more plausible.

Frequently a virtue ethics approach concentrates on the virtues of the moral agent rather than the criteria that might qualify an entity to be ascribed MS. However, virtue ethics is not just about how to *be*, it can also inform what to *do*, taking into account any particular situation, as both Hursthouse (1999) and Julia Annas (2015, 6) argue. As a normative theory, it does not guide actions

¹³ Deontological views (CDF 1987, Dworkin 1994) support FMS for the embryo, utilitarians argue that the embryo/fetus is not a person and has no MS (Tooley 1999, 22; Harris 1999).

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by telling us what to do, but by developing practical wisdom (*phronesis*), an ongoing learning habit, so that one makes use of what is learned and applies it saliently given varying situations (Annas 2015, 7). The traditional virtue ethics approach is a tendency to define ‘right action in terms of what a virtuous agent would do’ (Hacker-Wright 2007, 449). I suggest that the danger with this is that there may be a difference between what a virtuous agent would do and most normative ethical approaches, which refers to the way all rational persons would behave given specified conditions (Gert and Gert 2017, §2 (2)). Virtue and reason are not always concomitant, not all rational persons are guided by the virtues of justice and compassion, for example. What is pertinent is not just the moral agent’s characteristics, but empirical criteria intrinsic and extrinsic to the entity under consideration that should also influence any action, and this is the approach I propose. As Hursthouse and Dwyer both observe, when we extend our moral concern beyond *Homo sapiens*, this brings a multitude of moral issues which are not so easily solved by a single decisive argument (Hursthouse 2013, 3430; Dwyer 2011, 77).

My search for a fully explanatory account has led to an intermediate approach that is informed by the virtues of compassion and justice (Introduction, 3.5), that is not based on one criterion (the implausibility of which was shown in Chapter Two), and that increases in levels over the course of human development to FMS, with each level relating to the obligations due. FMS should be viewed as requiring stringent obligations usually owed to a typical adult human being (Jaworska and Tannenbaum 2018, s.2). The main advantage MMS offers over multi-criterial MS by degree, and the reason I am proposing this re-evaluation, is that it more closely explains why we have changing obligations to embryos/fetuses between syngamy and the onset of sentience. Previous views have generally considered that there is no change required during this period, which covers approximately the first six months of pregnancy (Warren 1997, 203).

To unpack this further, I will present two separate but inter-related arguments. First, I will give an account of what is necessary and sufficient to ascribe minimal MS in 4.2.1. Then, in 4.2.2 I will argue that the minimal level of MS ascribed to an embryo/fetus presents only a defeasible moral justification for non-interference. In the final part of this section I will discuss the advantages that the MMS approach brings to the subject. The criteria I defended in Chapter Three (3.5) in

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application to the embryo are life, genetic potential to become a person, relationship and function, though other criteria may apply to other entities. For example, sentience and higher cognitive function become relevant at later stages of human development, and I suspect that Warren's interspecific and ecological principles may pertain (1997), but proof of that is beyond the scope of this work.

Human embryos are alive and have the genetic potential to produce a person. Both these conditions are important, but neither is necessary, or solely sufficient, to justify a minimum level of MS. Together they may provide the basis for a minimum MS that gives a *prima facie* reason not to interfere, though there are exceptions to this when certain other principles apply. However, life is not a necessary criterion for MS, and it may be possible to ascribe MS to an entity that is not alive (as defined in 3.5.1). For example, suppose that an artificially intelligent android has lived with my family all of my life, performing the roles of housekeeper and nanny. Although she is not an organic life form, she appears to be alive in that she can contribute to conversations to a much more sophisticated level than Amazon's Alexa, seems to be self-aware, constructs and carries out plans, and empathises (at least verbally) with human emotions, seeming to care about family members. She is part of my family and community. She is not sentient, in the sense that she cannot feel pain, and sight and hearing are programmed functions. However, if someone was to restrict her movement, experiment on or reprogramme her, it could destroy her teleological function and harm her. She scores highly on sophisticated cognitive abilities and can mimic the actions of a moral agent. I have feelings of affection for her and she appears (or is programmed) to reciprocate. Assuming all this were possible, I do not think that as a moral agent I could deny an android I have a lifelong relationship with any pertinent obligations of MS. Despite the fact that she lacks the criteria of life and sentience, there is a reciprocal relationship if she has had and exercised the capacity to protect me from harm all my life, so it would be unjust to harm her. Multiple criteria apply, both intrinsic – a strong claim to higher cognitive functioning, and extrinsic – strong relationships and function. The virtues of justice and compassion reinforce a relatively high level of MS, close to FMS, for the android. However, let us return to the basis of my argument for MMS.

4.2.1 Accounting for necessary and sufficient criteria for a minimum MS

It is important to note that even with the paradigm bearer of MS (under uni-criterial MS), that is, an averagely intelligent human being whose MS might be thought to be based on moral agency, there are difficulties with considering moral agency both a *necessary* and sufficient criterion. It is sufficient, but to say that it is necessary instantly excludes many other potential candidates: the intelligent, empathetic extra-terrestrial, my family android, and any highly intelligent mammals that cannot or do not act like moral agents towards the human species (Warren 1997, 101; Wrigley 2013, e17). Sentience, another widely-held criterion for FMS, is convincing as a sufficient criterion. It is widely believed to be cruel to inflict pain needlessly on an innocent entity, but sentience is not necessary for every ascription of MS. My android lacks sentience, as do embryos/fetuses, biological species and ecosystems (Warren 1997, 51-2). But ascribing FMS to a human fetus only just beginning to develop sentience, if applied consistently across species, would commit its supporters to a view that many nonhuman animals also have an equal, if not greater, claim to FMS, such as adult mice, sheep or cattle (Strong 1997a, 462). If neither of these two accepted criteria can be both *necessary* and sufficient, then it is unlikely that any one criterion is ever necessary for MS. This may be thought to be a weakness of the concept of MS, because it lacks a precise meaning (as discussed in Chapter Two, 2.2.1), but it can also be viewed as making the concept adaptable.

My first premise is that MMS distinguishes entities ascribed MS from those who have no MS. This is also true of other multi-criterial accounts. A watch has no MS, a fetus has some, a person has FMS. The second premise is that all entities with MMS require moral consideration of our actions and duties towards them. They are not morally irrelevant, as those entities that have no MS are. I defined the meaning of MS in Chapter Two (2.1) as a means of flagging that an entity should be protected in some way because they have a sake of their own. The changing ways that moral agents ought to treat embryos/fetuses ascribed levels of MMS will be discussed in Chapter Five (5.6).

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MMS is ascribed on the basis of multiple criteria, *and* on multiple levels, because criteria may vary in strength, and our obligations to different entities need to be appropriate to their capacities. For example, a pet mouse is living, sentient, and can be the object of human love, that is to say, a relationship forms, however one-sided. The same may be said of a newborn infant, but the two do not share the same level of MS. This is because the infant also possesses a very strong potential to become a person, and any rational examination of the relative strengths of criteria, combined with a just and compassionate assessment of the kind of protections owed, is likely to ascribe a higher level of MS to the newborn than the mouse.

For the embryo/fetus, I detailed both the intrinsic and extrinsic criteria that I consider merit ascription of MMS in Chapter Three (3.5.1-3.5.5). These criteria may each strengthen independently as development increases. Once a fetus reaches sentience, other criteria begin to be activated that increase the level of MS, which further affects how we ought to treat them. Another premise is that as more criteria aggregate (such as sentience, or the ability to survive independently of a woman's body) further levels activate different obligations towards those entities, until FMS is reached. FMS is the greatest protection moral agents can ascribe to other moral agents currently.

The stringent obligations of FMS generally delimit a moral agent's responsibilities (Jaworska and Tannenbaum 2018, s.2). How the different criteria may be weighted, as certain criteria such as moral agency and sentience seem to carry more influence than others, such as potential, will be discussed in Chapter Five (5.4). The level of MS to be ascribed does not simply increase as an additional criterion is activated. Instead, the moral agent must consider what, if any, different obligation, or greater *strength* of obligation, is required to justly and compassionately protect the entity under consideration, and then decide to which level the obligations pertain. For example, there is a qualitative difference between the kind of basic sentience that shows as an animal's reflex action to move away from a burning sensation, and a more cognitively sophisticated entity's response to pain, where they can remember and continue to suffer from pain and the fear it creates. It seems inappropriate for moral agents to treat both reactions as equally serious. Neither should have pain needlessly inflicted on them, but there is greater onus on us to protect the more sophisticated entity from the additional psychological harm.

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This leads to my next premise: that greater moral weight attaches to the interests of entities with higher levels of MMS than towards those with lower levels. When considering the relative moral obligations there may be regarding abortion decisions, it seems reasonable to consider that an unwillingly pregnant woman has greater interests than the fetus she carries. This may be in part because no one is morally required to make a large sacrifice to sustain the life of another (Thomson 1999, 44), and also due to her sophisticated cognitive capacities. A minimal level of MMS may provide a *prima facie* obligation of non-interference for a fetus, but this can be defeated by relevant moral considerations towards an interested third party with a higher level of MMS. Concerns motivated by pursuit of virtues such as compassion (whether for the woman or the fetus), or justice, or in this case, a woman's right to bodily integrity, add to this moral justification. Note that the third party concerned must be directly affected by the situation in some way: if unrestricted, then this would open the floodgates to strangers trying to claim influence on situations. An unrelated fetal right-to-life supporter could not claim that the killing of embryos should stop universally, on the basis that her FMS means that others ought to respect her attribution of FMS to fetuses, a claim that Transitivity of Respect might imply (Warren 1997, 170). However, in cases of maternal-fetal conflict, the maternal MMS will usually trump that of the fetus because there is a direct correlation between the two: their fates are interrelated. The life of one is directly affected by (even threatened by) the life of the other, and a decision has to be made.

This does not mean that there should be an automatic assumption that *any or all* interests of an actual person should always be prioritised over killing an entity with less MMS, which would infer that the non-person has no real moral relevance or any interest in continuing to live, as Wrigley notes, correctly in my view (2013, e17). Consider a woman who does not discover that she is pregnant until the fifth month (a variation on Thomson's scenario of a seven-months' pregnant woman making an 'indecent' choice to abort (1999, 44); here the fetus is pre-sentient). She is financially secure and has good support systems, but prior to knowing, had booked an expensive scuba diving holiday two weeks before her due date, and scuba diving is a passionately held ambition. Morally, ought her self-interested desire for a holiday experience to prevail over the life of her unwanted, currently insentient but well-developed fetus, because she has FMS? Under

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MMS, it is clearly in the fetus's best interests to continue to live, and this is morally more important than going on holiday, all things being equal. However, the compassion we may have for the fetus with high genetic potential to become a person must be weighed against four months further wear and tear on the woman's body, the medical risks of giving birth, her right to bodily integrity, her thwarted ambition, and the lifelong responsibility of parenthood (though this latter point might be overcome through the option of adoption, as Elizabeth Harman points out (1999, 323)). It is vaguely possible, though doubtful, that no life for the fetus might be a better option than life with a resentful mother.

An embryo may be ascribed a minimum level of MMS due to their possession of at least two relevant criteria necessary for any entity to possess MMS. Were the pregnant woman in the scenario above to have discovered her pregnancy at six weeks' gestation instead, then the embryo's genetic potential to become a person is more likely to be judged too weak to counter-balance the woman's right to bodily integrity. This does not mean that her prudential interest in scuba diving is more important than the moral claim of the embryo to a chance of life that the minimum MS brings. It is the onus of pregnancy itself, and the sacrifices it requires of someone with FMS that tips the balance – Thomson considers that it asks more of a woman than to be a minimally decent Samaritan, and unless it is undertaken of her own free will, no one can demand it of her (Thomson 1999, 44). Practical wisdom is needed here to weigh up compassionately the embryo's valuable future and a coerced pregnancy, and perhaps the virtue of regret may be relevant. The woman's holiday priority may be selfish, but she should acknowledge regretfully that she is denying the embryo a valuable life. A minimum MS does not provide anything other than a weak and easily overridden reason not to kill, though there remain certain limitations on what can be done to entities with a minimum MMS. This will be discussed in regard to the Principle of Proportionality (4.2.4).

I have argued that no single criterion discussed in 3.5.1-4 is sufficient for MS alone. At least two are required for a minimum MS. Unlike Warren's theory (1997, 21), MMS does not *require* both intrinsic and extrinsic criteria, though one must be intrinsic. When both are present it may strengthen the level of obligation. Her argument for such a stance is that the extrinsic criteria correct the over-simplistic judgments of MS provided through intrinsic properties, and that 'considerations

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of both sorts are always relevant to questions about moral status' (1997, 172). Considerations of our reasons for ascribing MS to an entity cannot always be isolated to the intrinsic alone. As the poet John Donne observed, 'no man is an island' (1624). We cannot exist in the world without being part of the world. We affect and are affected by our surroundings, and as human embryos/fetuses are usually physically attached to a person, this is particularly true for them. However, to mandate a combination of intrinsic and extrinsic criteria seems to me to be introducing unnecessary artifice to the concept. The same criticism might be levied at the requirement of at least two criteria. However, such is the strength of argument that uni-criterial views tend to be over- or under-inclusive, there needs to be some additional requirement to counteract such objections. Two criteria are sufficient to ascribe a minimum MS, producing perhaps only one weak obligation that is easily defeasible. Every additional criterion helps to justify and increase the strength of the claim to MS, and hone the kind of obligation that is required. Warren is right to suggest that the addition of an extrinsic criterion helps to avoid a clash with some common sense beliefs, and that some cases require such criteria (1997, 172), but both types of criteria do not always have to be present in ascribing MS.

MMS can be applied in several levels that may increase (or decrease) over time as criteria aggregate (or are lost), each carrying particular obligations dependent on the circumstances pertaining. This reinforces what Little perceptively writes in describing a gradually increasing MS for the embryo/fetus: 'Part anticipatory and part achieved, moral status is comprised of a number of interweaving stages each leading to and giving way to the next' (2008, 332). For example, a minimum MMS is applicable to an embryo once syngamy is complete on the basis that a new biological human life is formed, with unique DNA forming a continuous genetic identity with the potential to develop into a person. This applies whether or not the genetic identity remains that of a unique individual or is shared by monozygotic twins. As discussed earlier, this gives only a very weak obligation not to kill, which is easily outweighed by considerations of what a woman must endure through pregnancy, and her FMS means her interests prevail. However, MMS is also strengthened when an extrinsic criterion applies, such as the progenitor's desire to reproduce. If these conditions pertain, then moral agents must give greater consideration and weight to the

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wellbeing of the entity in the situation that pertains, and decide what strengths of presumption there are against interfering with the entity (not subjecting them to experimentation, refraining from killing them, and treating them fairly, for example).

Both intrinsic and extrinsic properties should be taken into account by the moral agent when deciding which obligations should apply, and to what strength. This guides decisions on what is the right (or virtuous) action to take. MMS can be applied in several levels that may increase (or decrease) over a lifetime as criteria aggregate (or are lost), each carrying particular obligations dependent on the circumstances pertaining. This does not preclude further criteria such as sentience, higher cognitive functioning, or moral agency strengthening the level of obligations owed. As criteria aggregate or strengthen, MS may increase a level depending on the assessment of our obligations. Each increase in level of MS must relate closely to the particular obligations that MS demands of a moral agent, up to the FMS that is ascribed to a paradigm adult, as will be explained in 4.3.

Consider two six-day-old embryos. Both are living, and let us assume that both have the genetic make-up that would enable both to proceed to live birth. On the face of it, both embryos seem to have the same claim to MS. Embryo A is the result of a fifth cycle of IVF treatment undertaken by a couple where the sperm was donated before the man underwent cancer treatment that lead to infertility. There is no further frozen sperm remaining, so this is their last attempt to have a child genetically related to both of them. Embryo B has been donated to research as a by-product of IVF where the progenitors have decided their family is complete. *Prima facie*, it seems just to ascribe the same level of MS for embryos A and B, given they have the same intrinsic properties. Warren's multi-criterial view (discussed in 3.2) does not differentiate between the two, ascribing a weak MS based on the principles of Respect for Life and Transitivity of Respect (1997, 202).

Harman's Actual Future Principle states that '[a]n early fetus that will become a person has some moral status. An early fetus that will die while it is still an early fetus has no moral status' (1999, 311). This clearly would ascribe some MS to embryo A, but none at all to embryo B: the problem is that it would only do so in retrospect. Until embryo A becomes a person (and Harman

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does not clearly state at what stage this occurs), we would not know whether or not to ascribe any MS to them or not. If we fail to ascribe any MS at all to embryo B, then morally speaking, there are then no limits on their use at all, which implies that the Principle of Proportionality restricting embryo use to research for major health interests could be overridden (to be discussed further in 4.2.4). Perhaps this is not Harman's intention, she may assume that legal limitations on embryo use will suffice to limit such usage, or she may consider they have no MS so no limitations are necessary on usage. Her later Ever Conscious Principle, which states that '[a] being has moral status at a time just in case it is alive at that time and there is a time in its life at which it is conscious' (Harman 2007, 220), would again result in some MS for embryo A but none for embryo B. The difference between this and Actual Futures is that she has replaced the criterion of ability to achieve personhood with merely being conscious, thereby ascribing some MS to a late fetus, possibly, and more deliberately to an infant. However, the problem remains that until consciousness is achieved, we do not know how the embryo/fetus ought to be treated.

Persson and Savulescu propose a possible alternative view of the MS of embryos that they believe explains why it is permissible to use embryos for hESCR, which is that we should not be concerned with every embryo that has potential, but only those with 'actualizable (sic) potential' (2010, 57). Under the scenario I suggested above, both embryos A and B have the genetic and structural potential to develop into a person (an internal state). However, only embryo A has actualisable potential (AP), which 'depends on whether the relevant external conditions, be they biological or social, obtain that are sufficient to enable the embryo to realize its potential' (Persson and Savulescu 2010, 57). Persson and Savulescu consider that then the embryo has some 'downgraded' MS (not equal to a person, and not stringently opposed to killing) (2010, 57). Embryo B lacks any MS as any potential will not be actualised. Once reproductive needs have been met, it is permissible to use any spare embryos or create and destroy embryos for research as they have no MS (Persson and Savulescu 2010, 58), not least because these embryos would never come into existence without the need for research. In their view, no one is denied a life through this practice as they would never have had one otherwise (2010, 59), and this is a valid point as embryos intended for reproduction are not used for research until they become surplus to reproductive

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requirements ('spare'). As with Harman's principles, we cannot always know which embryos will be actualised, we can only know which are *intended* for reproductive purposes, therefore we might invest our time and effort unwittingly to protecting embryos lacking AP. This view does at least recognise both the value of potential and the importance of extrinsic conditions. However, it also assumes that the moral value of an embryo donated to research is zero, which ignores their value to medical research. This also implies that there need be no restrictions on usage whatsoever.

There are two elements to the AP argument that I dispute: Persson and Savulescu consider that an embryo without AP has no greater MS than two gametes (2010, 57), which depends on whether reproduction is desired. An MMS view of gametes is that though living, they lack potential as they are not genetically identical to any person that might be produced, so whatever their intended function, they do not have any MS before syngamy, whereas an embryo with two sets of chromosomes has genetic potential. Secondly, they consider that embryos that are produced as a result of sexual relations, which die through spontaneous abortion or use of certain types of contraception, are of no moral value because they are not actualised. I assume that spontaneously aborted embryos are lost due to chromosomal disorders that negate their genetic potential and remove their life, function and any possibility of relationship. I consider that research embryos that have their stem cells removed are at least fulfilling some valuable moral function in life through contributing to scientific research that may further our knowledge of medicine, even though this means they will never actualise. This is preferable to embryos being wasted, as happens with embryos surplus to requirement, that have reached the end of their cryogenic storage life, or whose donors decree that they must be destroyed without being used for research. Wasting valuable research potential ought to be avoided, as Harris argues, following a Waste Avoidance Principle which states that all other things being equal, it is better to make a beneficial use of something than to allow it to be wasted, and do no good (2003, 368-9).

Under the MMS view I propose, both embryos in my scenario have some MS, and as both have intrinsic and extrinsic criteria, it is higher than minimum MS (which would apply to an embryo that was destined neither for reproduction or research, such as an abortus that has only the two intrinsic criteria). Embryo B has a lower level than A, because though they have life, genetic

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potential and valuable function, this function will negate the need for strong protection from interference that an embryo purposed for reproduction has. There is only a weak presumption against killing the research embryo, their use in experimentation should be in accordance with the Proportionality Principle (as introduced in 3.6.3), and there remains a reason to treat them fairly. Embryo A would have an additional level of MS, whereby the presumption against killing can only be overcome if superseded by the right to bodily integrity of a woman who is either unwillingly pregnant (Thomson 1999, 41), or whose life or health is threatened by the continued pregnancy – that is, by a moral interest from a being with higher MS, or a stronger moral interest than a being with equal MS.

To recap, a minimum MMS might be applicable to an embryo once syngamy is complete on the basis of two intrinsic criteria: that a new biological *life* is formed with unique DNA forming a continuous genetic identity with potential to develop into a person. Extrinsic conditions, such as the progenitor's desire to reproduce or donate to research, place the entity firmly within their community and strengthen the MS. If these conditions pertain, then just and compassionate moral agents must give consideration and weight to the wellbeing of the entity in the current situation, and decide what strength of presumption there is against interfering with the entity (not subjecting it to experimentation, refraining from killing it, and treating it fairly, for example, according to Jaworska and Tannenbaum 2018, s.2.1-2.3).

4.2.2 Minimal MS presents only a defeasible moral justification for non-interference towards a fetus

Let us now consider what use having a minimum level of MMS is, which means that the entity has some claim to moral consideration. It is also important to understand why we should care about this. My first premise is that the ascription of a minimum level of MMS to a fetus means that we are required to undertake moral consideration of our actions and duties towards them. Guided by the virtues of compassion and justice, there are limits on how they can be treated, but given sufficient justification they may still be killed. It means, for instance, that the use of embryos/fetuses in any experiments is only ethically justified where the research purpose might not be gained by using other less controversial entities instead, as outlined in the principle of

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subsidiarity (Devolder 2005b, 172). This is important because it restricts embryo use to where it is strictly necessary, in order to prevent those who work in this field treating embryos as objects like any other. One might argue that if an embryo has been donated to research, it does not matter to embryos themselves what kind of research they are used in. However, a virtuous moral agent would want to avoid cruelty and disrespectful behaviour, and act in accordance with virtues such as compassion and justice. It is the mark of a civilised society to protect vulnerable entities and avoid their exploitation, which, despite the fact that an embryo has no personal cognitive capacity to appreciate such treatment, should be avoided.

The second premise is that minimal levels of MMS offer only a *prima facie* moral reason not to interfere with them. That there may possibly be situations which override this was discussed in 4.2.1. My third premise is that moral considerations of entities with a higher level of MMS can defeat the non-interference requirements of an embryo/fetus ascribed minimal MMS. Premise four states that moral considerations such as compassion, justice, respect for bodily integrity, caring, love – all possible virtues for someone aiming to follow a virtue ethics approach - constitute substantial moral considerations that may apply to, for example, an unwillingly pregnant woman.

The fifth premise is that the morally competing needs of an entity with a higher level of MMS morally justifies the interference with (and usually destruction of) the embryo/fetus. Where there is a morally justifiable reason to terminate the pregnancy, such as hardship to other family members or inability to cope psychologically with pregnancy, the needs of a person with FMS always prevails. The only possible exception might be with the example used in 4.2.1 of the pregnant woman who wanted a late abortion for the morally trivial reason of being able to go on a scuba diving holiday. The conclusion of the argument for MMS is that even if an embryo has a minimum MS, that must be weighed against any directly competing needs of entities ascribed a higher level of MMS by moral agents before any obligations are owed. However, additional moral arguments can still be made about the relative merits of the competing needs and the relative status of different third parties with equally high MS.

4.2.3 The advantages of MMS

MMS shares the advantages that multiple criteria brings, but in addition brings more clarity about how to treat entities far removed from the paradigm bearer of FMS: the intelligent adult human. Additionally, it enables more development-appropriate treatment for entities that avoid unnecessary and arduous over-protection of embryos surplus to reproductive requirements, but ensures that entities are sufficiently protected to enable their safe development otherwise. The early embryo has no feelings, no consciousness and is difficult to see, let alone identify, without scientific training. To take embryos into account as if they are our moral equivalent would be as challenging as applying Schweitzer's reverence for life to a beneficial species of bacteria (2009, 159): ultimately untenable. Attributes of developing life forms vary greatly – extending the same obligations to all stages is neither appropriate nor realistic. The MMS approach, however, enables potentially valuable futures to be given some appropriate protection from harm (striking a middle path) while not penalising existing members of the species by preventing most abortions or the benefits that may result from hESCR. MMS also accounts for the problem of whether we treat a sentient animal as less important than a human embryo: the answer is that our obligations should relate to the stage of development and the entity's relationship to the outside world, avoiding anthropocentrism.

The advantages that Warren's and Dwyer's multi-criterial views bring, and that MMS shares, include increased flexibility. It supports the common sense view that there are many reasons why we have obligations to others, not just a single criterion. This means that different obligations can be applied as appropriate for the needs of different entities. Rather than having a fixed necessary and sufficient criterion that applies in all circumstances, there is a range of morally relevant considerations that enable us to see what we owe to a range of different entities.

Secondly, multi-criterial views acknowledge that we have a serious obligation to entities that lack FMS (Uí Chonnachtaigh 2012, 41). For example, a newborn infant does not yet possess a person's complex psychological capacities and is certainly not capable of acting as a moral agent, yet our moral intuition is that we should not harm them in any way and should take any necessary

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actions to preserve and promote such life. The further advantage MMS brings is an emphasis on appropriate obligations combined with the virtue ethics approach: this ensures that the protection an infant should receive is stringent non-interference, equivalent to a person with FMS but for different reasons. Animals also need to be considered as moral subjects.

Thirdly, a multi-criterial approach supports the view that MS changes over a lifetime, starting with little and growing as a criterion strengthens or criteria aggregate, for example, as relationships strengthen, or sentience and personhood develop. It helps explain why MS may decrease slightly in the wake of certain life events such as the onset of dementia or an accident causing permanent loss of brain activity, which mean that someone loses their autonomy and moral agency. This does not mean that stringent non-interference is reduced so that killing becomes possible, but it does mean a change in the way that they are treated. As with children, moral agents need to take over certain decision-making capacities and step up the degree of personal care given, and probably restrict the freedom of movement the person has for their own safety. Loss of higher cognitive function requires different obligations for the being's own protection. It is Dwyer's contention that the MS of a child aged 6-12 may be higher than that of a mature adult on a multi-criterial view (2011, 148-78) based on his assessment of the weighting of criteria: life, relationship, sentience, subject-of-a-life, higher cognitive function, rational capacity, autonomy, spiritual aliveness, potential for future life and awe-inducing characteristics such as beauty. His argument that children have higher MS than moral agents depends on significant weighting towards factors that I am not persuaded are vital for moral relevance, such as physical appearance and the degree to which one manifests 'aliveness' (Dwyer 2011, 63). However, he makes a valid point about the need for MS: if it is about how we should protect an entity, its ascription is more important for vulnerable entities than for moral agents that can probably protect themselves (Dwyer 2011, 178). Fourthly, multi-criterial MS is more consistent with our moral psychology in acknowledging several criteria that may contribute to moral significance (Dwyer 2011, 118).

The major virtue of any multi-criterial approach is that it is better able to explain widely-held opinions about relative MS for a range of different entities and suitable treatment. The multi-criterial view overcomes both the problems of the conceptionist view in ascribing FMS to the

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embryo (which implies that we should prevent abortion on any grounds, hESCR and the production of any spare embryos in IVF treatment), and those of the personhood view that ascribe zero MS to them (which would remove any *moral* limitations to the way the embryo is treated in laboratories or *in vivo*).

While multi-criterial MS is an obvious improvement on previous theories of MS, there are missing elements that MMS seeks to redress. Warren does not broach the subject of how to weight the relative importance between her seven principles, and her theory raises other questions that MMS tackles (to be discussed in Chapter Five, 5.3), such as what provides sufficient grounds for a minimum MS (which were discussed in 4.2.1).

Supporters of either of the absolute views of MS for embryos/fetuses are as unlikely to be persuaded by the MMS view as any other intermediate or multi-criterial view. However, those who consider that it seems logical that MS increases as an entity develops will find that there are many advantages to this approach. In addition to the advantages shared with any multi-criterial view above, the MMS view provides an intermediate view that ascribes certain weak obligations to the earliest embryo that increase in strength as criteria aggregate, or as a particular criterion strengthens, requiring different obligations to the developing embryo. What is important about the MMS view is that it explains when, how and why some embryos/fetuses have higher MS than others, with appropriate justification, and I will demonstrate this in Chapter Five. MMS is also promising because it explains why even the earliest embryo, pre-individuation, might be morally relatively important when they are part of a much-wanted reproductive plan, but why other embryos, though of the same origin and age, may knowingly be killed or experimented on. I believe that this underpins the intuition that many hold regarding the developing embryo/fetus, that their moral importance and our obligations towards them increase the closer they get to birth.

In addition MMS avoids the ‘Schrödinger’s Fetus’ effect (Räsänen 2019) of having simultaneously contradictory ascriptions of MS, so that we have to suspend our judgment on whether to ascribe MS before we find out whether the embryo/fetus has an actual future or actualisable potential (Harman 1999, Persson and Savulescu 2013), which cannot happen before birth. The advantage of an MMS approach over these views is that it provides a way of ascribing

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an appropriate MS in real time, by considering both intrinsic and extrinsic criteria, as they are currently constituted, rather than in retrospect. The use of multiple criteria and multiple levels in MMS treats the embryo/fetus appropriately for the age and stage of their development. This avoids the under-inclusion of entities within moral protection that personhood supporters do, without wasting energy and resources on over-protecting an embryo. The MMS view does not curtail a pregnant woman's rights or those of medical researchers working with embryos by demanding life protection for every embryo ever created. As Ronald Green notes, such boundary extensions carry a price: 'a corresponding diminution of living people's rights, liberties and resources' (2001, 38). If hESCR was banned tomorrow, it is unlikely that any more embryos would have the chance of living a valuable life because of the ban: all the embryos that are required for reproductive purposes are already used for that. Research embryos are leftovers from this process, or produced by technologies that current UK law prohibits for use as reproductive embryos. Even if the removal of stem cells is done without destroying the embryo (Anon. 2007; McMahan 2007, 170), it would take a brave woman to risk implanting the kind of embryo that may have long-term health implications (even supposing it were legal to do so).

Furthermore, it reinforces several key principles: Proportionality, which is that embryo research is only permissible when serving a major health interest; Subsidiarity, which states that the derivation of ESCs from spare embryos is only ethically justified if there is no suitable and less controversial alternative means of achieving the research purpose (both Devolder 2005b, 172), and Waste Avoidance, that it is better to do something good than nothing good (Harris 2003, 368-9). By including multiple criteria, intrinsic and extrinsic, and considering MS as something that can be ascribed in levels, rather than FMS or zero or a continuum, this approach enables development-appropriate consideration for those entities whose correct treatment has been a source of argument for decades. We can consider the entity and their intrinsic qualities alongside their relationships and function in life, and form a virtuous moral agent's view of our responsibilities towards them.

Another strength of the MMS approach is its applicability to others outside the paradigm of an adult *Homo sapiens*. This ranges from animals that have some degree of sentience, including those who are conscious and able to communicate, to non-carbon based extra-terrestrials or

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artificial intelligence (such as the hypothetical android discussed earlier), and includes humans cognitively different from the paradigm for some reason, as well as to human life in its earliest stages. Dependent on the combination of qualities the entity possesses or external considerations warrant, our obligations towards the entity can be very flexible. Due to all the permutations there may be, this process demands a way of working out comparisons between different types and levels of MS, and I make recommendations for how to approach this in Chapter Five (5.2-4).

The MMS view is a holistic approach that views embryos/fetuses as deserving of particular moral consideration from the earliest stage, based on their value as living entities with genetic potential, but taking into account extrinsic factors such as the progenitors' wishes. The latter may seem like a contradiction in terms: one view of ascribing MS is that it gives priority to the needs of the entity itself because of the entity's value (Harris 1985b, 2). However, the MMS view balances the relative MS with the tension between two demands, our obligation to enable the embryo's valuable future as far as possible, and the will of an entity with far greater MS and a responsibility for the embryo's procreation.

Finally, MMS explains how the MS of the developing embryo/fetus increases as criteria aggregate and strengthen (a detailed account of this appears in Chapter Five, 5.6). This creates a development-appropriate MS that may be universalised to the developments or differing characteristics of different entities. For example, one might argue that if minimum MMS is based on at least two criteria, it would be possible to ascribe it to a predatory wild animal, for example, or a rat. Both are living, sentient and may have an important function in our biosphere, if Warren's ecological criterion (1997, 166-168) pertains.

4.2.4 Answering challenges to the Proportionality Principle

Obligations to early embryos usually refer to limitations placed on their usage. The Proportionality Principle (that embryo research is only permissible if it serves an important purpose such as a major health interest) has its supporters (Beyleveld 2000, 78; Devolder 2005b, 173), but Pugh points out that it presents certain challenges (2014, 423). To those who argue, as I do, that embryos deserve *some* protection short of a right to life, which restricts the ways that moral agents behave towards

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them, he suggests that anything other than life protection is not really protection for the embryo's sake. He concedes that it may be plausible that we can deny the embryo a right to life, and still coherently claim there are some moral constraints on how we treat embryos. But we need to be able to explain which aspect of the embryo is morally relevant, and why (Pugh 2014, 422).

For the embryo/fetus, the fact that they are living is morally relevant *prima facie*: as discussed in 3.5.1, all life forms can be benefited or harmed by loss of life (Goodpaster 1978, 320), even if they are not currently capable of forming that thought, as without life, no entity could continue its teleological development to fulfil its potential. In Chapter Three (3.2) I argued that an embryo can appropriately be described as a potential person due to their genetic continuity. The embryo's genetic potential to become a person presents the possibility that this will happen and if and when it does, then FMS will be ascribed to the moral agent. Unless there is sufficient justification otherwise, we ought not to prevent the embryo from fulfilling their potential. Many of us consider that the embryo/fetus ought to be protected, probably as part of our evolutionary drive to protect our own species (Beyleveld 2000, 64).

This then brings us to question: what does provide sufficient justification to kill the embryo/fetus, and why can limitations on their usage be considered to be protecting the embryo/fetus for their own sake, rather than as an appeasement to our consciences? If there are no firm lines, then embryos/fetuses could be used for any reason, and it would still be moral, if not legal. Pugh points out that we could claim that we have different sorts of reason to pursue different research goals, and distinguish between moral reasons for an action versus prudential ones (contrasting a societal code of conduct with a more self-interested view). He suggests that we might claim that 'we have a *moral* reason to pursue treatments that correspond to a *need*, but... only prudential reason to pursue treatments that correspond to a mere want' (Pugh 2014, 425). A need would be an aspect of health that impairs or threatens continued existence, whereas a want would be something that will improve quality of life, such as cosmetic surgery to reduce nose size, versus a need for treatment for motor neurone disease (Daniels 1981, 152). But in order to draw a non-arbitrary line between the moral and prudential, Pugh points out that we need a substantial account of what distinguishes a want from a need (2014, 426).

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Under the Proportionality Principle, justification is provided if research serves a major health interest (Devolder 2005b, 172), which sounds reasonable. To enable scientists to prevent, treat or cure the morbidities of currently existing people is an important cause, and worth the loss of life of an embryo, provided that the embryo is surplus to their progenitors' reproductive requirements. However, as Pugh points out, we need to define 'major health interest' and work out, without being arbitrary, exactly what research aims count morally, and which do not (2014, 425-6). Why is it sometimes morally wrong to destroy embryos, and yet under other circumstances their destruction is the morally right path, when in both circumstances it would benefit currently existing people (though not always morally)? The discussion in Chapter Two (2.4.1) about the circumstances under which we might kill someone we love or respect in order to prevent them further suffering does not pertain here, unless one considers that it is morally preferable to do some good (albeit unwittingly) through some research use to increase empirical knowledge, rather than none at all while indefinitely preserved cryogenically.

On the other hand, we must be wary of not narrowing the definition of 'major health interests' by limiting it to research on life-limiting or life-destroying conditions. Research on corona viruses, which range from the common cold to the more threatening strain SARS, might well be considered worthwhile. Given how many working hours are lost to the everyday cold, and how many lives it may potentially ameliorate given how widespread these viruses are, then a case might reasonably be made that it is more compassionate to consider that the amelioration of lives with FMS far outweighs the loss of embryonic life involved. In view of the loss of life, social and economic impact of the corona virus Covid-19 when a large percentage of the global population had to be self-quarantined in 2020 (Kaplan et al. 2020), this would certainly qualify as a major health interest. Extending this justification becomes more problematic when the 'medical benefit' is less clear. For example, if hESC therapy could prevent acne – a common and widespread problem that causes psychological damage to vulnerable teenagers, but one not usually considered a major health issue – deciding whether this is a rational way to prioritise the use of research embryos rather than researching cancer treatments would be a difficult calculation.

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Pugh's final challenge is to explain why uses of the embryo in research that is not in pursuit of major health interests fail to acknowledge what is morally relevant, and violate obligations due. Research to improve cosmetic surgery, for example, may appear to be merely a prudential (self-interested) choice, but when it enables facial reconstruction after damage in conflict or fire, or prevents major psychological damage, then the goal may be as morally important as cancer research. As Hursthouse comments:

A thorough discussion of the morality of the research would involve, amongst other things, questions about what counts as 'serious' or 'important' research, what sorts of means are justified by the ends of relieving suffering and acquiring knowledge, and the extremely difficult topic of what sort of justification can be given for using other animals rather than human beings as research subjects (Hursthouse 1987, 31).

She makes her point through an illustration about experiments that were carried out in the USA in the 1970s on living fetuses obtained from abortions (spontaneous or otherwise), some of which weighed considerably more than premature infants that have survived. They were placed in warm saline solution and kept alive by oxygenating their blood for five hours without respiring, until the oxygenation was stopped. At this point gasping respiratory efforts were noticed until they died some 21 minutes later. Few of us would wish such research to continue. There are some purposes that may add to empirical knowledge, but breach moral barriers, especially when these are carried out on fetuses so close to viability that there is a strong probability that this could have been a valuable life (1987, 30). Supporters of this research might argue that the fetus was unwanted and being terminated, so the research is merely complying with the Waste Avoidance Principle. It is unlikely that any Ethics Committee would approve such research today. Rules do vary in the time limits for abortions and research, there is a legal disparity between the time research on embryos must stop and abortion regulations, but this is because a woman's rights justly dominate in consideration of the latter. However, if we come to consider embryo research *per se* to be merely 'innocuous', it is concerning because it does prevent the natural course of a life.

Perhaps this is where the virtue ethics approach of MMS provides an advantage over other multi-criterial approaches, as part of the moral calculation is whether, given both the active criteria and the circumstances, the pursuit of the virtues compassion and justice are best served by permitting the research use of the embryo or otherwise. Trying to make that judgment solely on what criteria pertain could be difficult without these standards as guidelines.

4.3 Why levels of MS are more plausible than degrees

In this section, I will argue that it is preferable to think of MS as increasing in levels rather than the concept of degrees. First, I explain what the concept of degrees of MS is, then how Strong introduced an alternative concept of levels. Finally, I suggest that the idea of levels should be applied differently. Rather than milestones in biological development, levels will represent the strength of each criterion and relate to the types of obligations that should apply.

4.3.1 Degrees of MS

An early reference to the idea that MS might come in degrees was introduced by Harman when discussing potential, and why babies matter due to this, though (in her opinion) embryos did not (2003, 175). If one being has more MS than another, she reasons, then equal harm applied to both matters more for the one with higher MS (Harman 2003, 182-3). Threshold MS denies any moral consideration to chimpanzees and dolphins, and DeGrazia considers that ‘failure to attribute *any* moral status to sentient nonpersons is a fatal flaw in a moral theory’ (2008, 189, my emphasis). Singer (1993) and DeGrazia (2008) consider that certain animals have MS (but less than that of persons), and the latter theorises that there may be degrees of MS.

For DeGrazia, sentience is at least one important determinant of MS, and before this it is only partial (though he does not deny its existence altogether), suggesting a gradual acquisition (DeGrazia 2006, 54). If it is gradual, then fetuses and sentient animals have less MS than a paradigm person; this suggests MS admits of degrees. MS as a matter of degree implies that it is possible for statements to be true such as ‘it is generally worse to kill a person than to kill a mouse’, even if killing a mouse is *prima facie* wrong (DeGrazia 2008, 186). He then outlines two models

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for degrees of MS. The first, “Equal Consideration/Unequal Interests” model, assumes the utilitarian concept of equal consideration (EC) for both persons and mice, but ‘grants equal moral weight only to comparable interests’ (DeGrazia 2008, 188). Equal consideration of interests does not always necessarily mean that the same treatment would be meted out to both, if the two entities under consideration have different types of interests or characteristics, as discussed in Chapter One (1.4.1). Singer gives the example of two earthquake victims who would both benefit from the medical supplies left at the First Aider’s dispensation, but rather than treat them equally, it may be in the interest of one to have all the supplies under triage rules (Singer 1993, 24-25). However, Dwyer justifiably criticises Singer’s EC principle that this framework is based on (Dwyer 2011, 132-3). He rightly argues that Singer fails to offer either a source of, or reasons for, accepting this idea: ‘[h]e simply supposes that the burden of proof is on inegalitarians to demonstrate the relevance of factual differences ...’ (Dwyer 2011, 133). Dwyer considers that egalitarians have no positive theory to support their view, which contradicts the fact that every basis for MS works to different degrees in different beings. He suggests that we might consider a child and an adult to have equal consideration, but we would give more assistance to a child and more freedom to an adult (Dwyer 2011, 8), correctly showing that our obligations vary according to the entity’s capacities and external circumstances, even if both have FMS.

This leads to DeGrazia’s second model for degrees of MS, unequal consideration (UC). This holds that ‘although all sentient beings have direct moral importance and therefore MS, how much consideration one particular being deserves depends on what sort of being it is’ (DeGrazia 2008, 192). DeGrazia says that under UC, ‘persons have interests in experiential well-being, autonomy, and life (remaining alive)’ (2008, 187), whereas sentient nonpersons including animals have interests in experiential well-being and life. Lacking autonomy, they have less of a stake in remaining alive. Harman argues that we need not appeal to degrees of MS when differentiating between the deaths of a cat and a person both in the prime of their lives, because persons have stronger reasons to live, with plans and desires about the future, and so death is a greater harm to them (2003, 180). However, the argument that a person and cat are due unequal consideration may be more easily understood on the grounds of MMS. A cat has some MS on the grounds of life and

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sentience, but a person has the additional grounds of higher cognitive functioning and moral agency.

DeGrazia suggests that UC theories are required to assert degrees of MS. He outlines two models for degrees: first, the two-tier model where there is FMS and a lower level above zero held by sentient non-persons. Alternatively, a sliding-scale model, with any number of degrees, dependent on the degree of ‘cognitive, affective and social complexity’ (DeGrazia 2008, 192). This might be based hierarchically on the phylogenetic scale, DeGrazia suggests, but beyond this, he does not detail how it might work (2008, 192). Sumner describes a sliding-scale model as ‘a determinable whose values can be ordered along a continuum’ (1981, 26). The drawback of this is that if degrees are based only on biological species, it fails to take into account variations in criteria between different types of persons, as well as between sentient and non-sentient entities who are morally considerable. As we have seen, these are addressed by the MMS model.

DeGrazia notes that each of the properties that form the cluster concept of personhood – moral agency, autonomy, rationality, self-awareness - may come in degrees:

...if these morally relevant properties come in degrees and cross species boundaries, it is natural to judge that the moral status based on these properties also comes in degrees while extending beyond our species – supporting the sliding-scale model of moral status (DeGrazia 2008, 193).

Sentience also may come in degrees: different sorts of sentient creatures may have differing degrees of capacity to experience pain and pleasure, and even within humankind we all have different pain thresholds (the minimum point at which something causes you pain) and tolerance levels (the maximum amount of pain you can tolerate) (Cafasso 2018). Potential, as discussed in Chapter Three (3.5.2), increases the closer to actualisation it becomes. Given these possible variations, there could be an infinite spectrum of MS, with any entity having multiple continuums for whichever criteria apply. Yet this does not help answer the question of how entities with less than FMS ought to be treated. Criteria such as sentience and consciousness develop and become more important over a period of time, as the neural and cognitive capacities increase in

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sophistication. However, the moral reasoning behind ascribing MS to a sentient being is that it prevents the cruelty of inflicting pain on something capable of experiencing it. Singer (1993, 59) and DeGrazia (2008, 187-8) argue that it is worse to inflict pain on a more sophisticated entity that retains memory of the pain, and if they are right, that suggests that our obligation towards the sophisticated entity is a more stringent protection against such interference.

4.3.2 Levels of MS versus degrees

MS increasing during gestation is intuitively plausible because it explains widely-held views such as why early abortion is morally preferable to late abortion. Little describes MS as something that emerges and increases ‘as the balance between potential and actualization (sic) shifts’ (2008, 339), and argues that as the fetus’s status increases, there are stronger claims for protection and assistance (2008, 343), which seems logical. However, I follow Strong in rejecting the idea of a sliding scale, which implies continuous linear increases which correlate with each minor physical development, when it is not clear that those developments should count morally (1997a, 458). His less complex and more pragmatic solution views MS as increasing in levels as milestones in fetal development that have special moral significance are reached (1997b, 41-62). He reasons that the accumulation of different criteria such as potential to produce self-consciousness, potential to become self-conscious, sentience, viability, birth and similarity to a normal adult increase the case for conferring MS. Though some of these have been suggested as sufficient for MS, none is compelling on its own:

What is overlooked is *the significance that should be given to the aggregate possession of these characteristics*. The combination of these similarities, I would maintain, is significant enough to warrant conferring upon infants serious moral interests, including a right to life (Strong 1997b, 58, my emphasis).

The idea of increasing MS during gestation aligns with widely held intuitions such as: that birth control involving the prevention of implantation of embryos is not objectionable (e.g. an intrauterine device or the “morning after” pill); early abortion is preferable to late; in cases of

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maternal-fetal conflict, the woman's status prevails; fetuses near term have similar if not the same MS as newborns; and that infanticide is wrong (Strong 1997a, 458). However, Strong rejects a "gradualist" view that there are continuous changes in MS proportional to fetal development. This wrongly implies that a 32-cell embryo has greater MS than a 4-cell one, but fails to explain why this should be (Strong 1997a, 458). He rejects the idea of a sliding scale, continuous increases which correlate with each minor physical development, when it is not clear that those developments should count morally (1997a, 458), and in this I think he is right.

There is an important flaw to the idea that there are such fine delineations as degrees of MS. The problem is, "degrees" implies that there is a continuous gradual increase in the MS of a developing entity over time, correlating with biological development in a linear progression. This would create an unlimited range of degrees on multiple axes. There cannot be moral differences between every new development that justifies such fine and complex delineations, and which underpin different obligations to the way moral agents treat the entity ascribed MS. In practical terms there is a limit to how many different ways there are to behave towards a being which does not correlate with the almost infinite number of degrees of MS that could be ascribed. A major criticism of this has been that '[t]hose who accept that moral status comes in degrees have not developed fine-grained accounts of what each degree of status would involve' (Jaworska and Tannenbaum 2018, s.3).

Strong's view that there are levels rather than a continuum of MS helps explain how and why MS increases at times during gestation based on moral reasons, rather than purely developmental increases, and is more plausible than degrees because there are different justified steps rather than the blur of a continuum. In Strong's view, there are milestones along the course of fetal development that have special moral significance (Strong 1997a, 458). Although he points out some milestones (individuation, sentience, viability, birth), the gap between individuation and sentience seems to blur into a continuum, despite the fact that he claims that '[t]he presence of such milestones is at odds with the view that moral standing increases linearly as pregnancy progresses' (Strong 1997a, 471).

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Individuation is a milestone on the basis that it is only from this point that there is continuity of identity with the entire collection of cells present in the embryo proper, Strong claims (1997a, 460). However, I disputed the claim that individuation marks the start in Chapter Three (3.2). Before gastrulation, he considers that the cells that will form the person are indistinguishable from the placenta and other life support mechanisms, which means that the pre-individuated embryo does not have a right to life. Embryos are still more than morally equivalent to other human tissue, due to the potential to cause self-consciousness, and Strong asserts that embryos deserve respect, which entails recognising that there is a qualitative difference between embryos and what we normally recognise as property (1997a, 472-475).

Strong admits that sentience is not a necessary criterion, or it would commit us to ascribing FMS to any other animal with a similar degree of sentience (to avoid speciesism and be fair in complying with the required generality of MS). However, he considers that sentience is the basis of moral interests, and we should give greater consideration to individuals with interests than those that lack them (Strong 1997a, 469). However, sentience together with other criteria such as the increasing similarity between late fetuses and paradigm persons does create a stronger conferred MS in his view. Strong considers that entities lacking personhood do not actually have intrinsic criteria, but it is justifiable to confer MS on them because of the consequences of doing so (1997b, 53-6). Strong also considers similarity to the paradigm adult human important because psychologically, the more similar individuals are to the paradigm, the more likely it is that failing to confer a right to life on them is wrong because they are close to actualising their potential (1997a, 467-8). Viability is another relevant milestone in his view, because it brings an increase in social role, and makes the fetus a moral patient, while birth itself widens the social role. Strong validly argues that MS increases in levels for a reason, not by stealth on a continuum, although he confers MS on embryos/fetuses only due to the consequences of not doing so, whereas I hold that embryos/fetuses have intrinsic criteria (1997b, 61).

4.3.3 Beyond Strong: what MMS contributes

The MMS argument concurs with Strong in considering that MS does not increase on a continuum, but in levels. Strong is correct that it is not *every* development that happens over time which creates changes in MS, only certain ones make a moral difference. However, MMS differs from Strong's account (1997a, 459) in three key areas. First, his levels are dependent on achieving one of the four or five (if similarity to the paradigm is included) developmental milestones, whereas I consider that a minimum MS is present when two or more criteria are present, and increases as a criterion strengthens, or additional criteria aggregate. I argue that the levels of MS are closely linked with, and cannot outnumber, the various permutations of obligations (as outlined in Chapter Three (3.6)) that are then due to the entity. These obligations should be appropriate to the entity's needs at that time in its development. Thus, MMS is not just about milestones in biological development, but levels created by intrinsic and extrinsic criteria, all delimited by the permutations of types of treatment that moral agents should be obliged to give to any entity ascribed some level of MS. Second, MMS considers that embryos/fetuses have some intrinsic, not conferred, value based on their life, and genetic potential to become a person. Third, I have argued that extrinsic criteria contribute to an aggregated MS, such as function and relationship. This justifies a minimal MS, resulting in an approach that limits how they are treated but does not consider them inviolate.

One of the most important aspects of MS is that we should know how to behave towards any entity ascribed some level of MS. Part of the appeal of the claim that FMS equals a right to life is that it makes that particular obligation clear and simple. However, as Warren has noted, humans are clever, opportunistic and capable of doing widespread harm (1997, 10), so it is in our own best interests to construct a minimum standard of obligation. As our moral problems become more complex (with the technological advances that permit us to observe, create and increasingly nurture life *in vitro*, for example), conceptual simplicity, though important, is not paramount. Judgments about MS need to be credible and consistent with good sense (Warren 1997, 21-22). It may be true that there are infinite variations in moral psychology and development among all beings in the moral universe, which give rise to an infinite number of degrees of MS, but there are only so many

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different obligations that moral agents can owe. Different criteria (such as relationship and sentience) may develop or strengthen and increase an entity's level of MS, and the MMS model relates these possible variations directly to the obligations MS demands, dependent on the quality, type and strength of criteria relevant at the time.

A mosquito, for example, is a living organism and must have some function within the ecosystem. If Warren's ecological principle is correct (which is beyond the scope of this work), then it might be morally wrong to wipe out the entire species, but it would not be a moral wrong to kill those that are attempting to bite us, to prevent the risk of contracting malaria or even the discomfort of the reaction to a harmless bite (1997, 166-8). A pre-individuated embryo that has fewer capacities than the mosquito – they cannot move independently or feed themselves, for example – may not be deliberately killed without further consideration because as well as being alive, they have the genetic potential to become a person. In addition, they may exist because of intentional efforts to reproduce, or be wanted even if reproduction was not the original intention. That relationship with their progenitors, in combination with life and potential, is sufficient to ascribe more than the minimum level of MS, because in the circumstances the appropriate level of obligation is one of strong non-interference.

This is in stark contrast to a similar embryo whose intrinsic criteria are identical, but who lacks relationship because their progenitors do not want to reproduce. They have neither a reproductive nor a research function. They lack any connection with the outside world, having only the minimum level of MS that prevents their misuse under the Proportionality Principle. Another similar embryo, created *in vitro* originally for reproduction, but no longer required (or rejected on ground of quality) for reproduction, would have a minimum level of MS if donated for research, because they have a valuable function to fulfil (that contributes to acquiring important medical knowledge). One might argue that embryos cryogenically frozen also have a minimum level of MS because they may one day have a function. However, embryos that are surplus to requirement for either reproduction or research lack any extrinsic criterion, and ought not to be ascribed any MS. The Proportionality Principle would ensure that, were it possible to get hold of these unwanted embryos, they could not be used for any non-medical purposes.

4.4 Defending MMS

In this section I will respond to possible objections to MMS. In Chapter Two (2.1) I quoted Liao's (2010) view that every account of human MS will face difficult issues, and MMS is no exception. I acknowledge these difficulties and make suggestions for how solutions might be found.

4.4.1 *Too complex*

Complexity is a major drawback for any multi-criterial thesis. With several different moral criteria to be considered and applied, the balance of moral obligations is likely to differ between moral agents. There will be disagreements between rational agents as to the nature of any normative theory, and even as to which normative theory we should follow. I aim to make a rational case for why we should utilise MMS in our moral deliberations as a way of understanding the world, and how it might fit in with existing moral theories. There needs to be some consensus on boundary points (Green 2001, 38), which is why there need to be clear criteria for MS, even in a virtue ethics approach, contra Hursthouse's suggestion that only virtues or vices should guide agents (2013, 3431).

The charge that MMS is too complex to apply, requiring an assessment of multiple relevant criteria of differing strengths, and working out which obligations pertain at each developmental stage, is not one that can be easily overcome. Applying MS on a range of criteria that for present human development alone comprises life, genetic potential and extrinsic criteria such as relationship and function is complex enough. Then to consider differing strengths within each criterion that are dependent on developments, which in the unborn fetus are difficult to detect, render it liable to accusations of impracticality and over-complexity. To provide a clear guideline, it might be argued, you need an easy-to-apply bright line which clearly separates those who should from those who should not be ascribed any MS. Ideally, a theory of MS needs to fix usage in order to be applicable in practical circumstances, as discussed in Chapter Two, 2.1 (Wrigley 2015, 480).

A clear-cut rule (from a deontological approach) or questioning of the consequences of an action (taking a utilitarian view) might provide much easier guides to *apply*, but as we have seen, such simplicity leads to under- or over-inclusion: their consequences can lead to major injustices.

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Conceptual simplicity may be important, but Warren argues that greater simplicity at the level of theory (e.g. utilitarianism) does not guarantee ease of application practically. Simpler approaches such as utilitarianism do not always result in straightforward solutions for practical moral issues, and an approach that draws on diverse insights may provide more pragmatic solutions (Warren 1997, 22-3). Moral theory must also be consistent with good common sense judgments (unless the theorist can prove these are based on an error), and above all it must adequately represent the moral data available (Warren 1997, 22).

In Warren's opinion:

Accepting a plurality of fundamental principles of moral status precludes the generation of solutions to difficult moral problems through the mechanical application of a simple formula to the empirical data (1997, 241).

Simplicity and ease of application might be the necessary approach in law-making, but in moral philosophy it is more important to find the correct ethical approach, and to apply it as appropriate for every entity.

Though law and morality both contain norms that are identical in content, law is often designed to facilitate the common good through a system of rules of conduct, whereas morality is a system of norms and expectations that govern our beliefs concerning our actions. Some laws mirror society's majority moral view, for example, that murder is wrong, but society's views change and may influence revisions of the law, as has happened in the UK over legalising same-sex marriage (Marriage (Same Sex Couples) Act 2013), and in the Republic of Ireland recently where legislation was changed to allow access to abortion following a 66.4% majority vote in a referendum in May 2018 (Health (Regulation of Termination of Pregnancy) Act 2018, Explanatory Memorandum). It is better to have a complex but comprehensive moral approach than an easy-to-apply moral principle that is either over- or under-inclusive.

As Dwyer observes, with several criteria in operation, each of which may have different strengths, and with uncertainty regarding the relative weighting between criteria, ascribing MS

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could involve a highly complex calculation (2011, 140). The alternative to trying to tackle this would be to retreat to the single necessary and sufficient criterion, but the evidence is overwhelming that this would be a retrograde step: no single criterion can cover all necessary considerations. Complexity should not be confused with ‘lack of clarity’. MMS is undeniably complex, but it also offers clarity in how multiple criteria, with multiple levels, can be used to determine a discrete set of obligations. Over-simplification can be a blunt instrument, as Chapter One proved. MMS avoids many of the pitfalls that a lack of subtle distinctions brings. While it is important to keep a sharp focus on what is important, and to cut out the superfluous, ultimately what is most important is to get as close as possible to the truth of the matter. Anthropocentric concerns have dominated the MS discourse, understandably, but now that the field has been widened, we can reassess and question the conclusions that have been previously drawn, by using a multi-criterial approach.

The advantage of MMS over Warren and Dwyer’s accounts is that MMS is clear that at least two criteria must apply to form sufficient grounds for a minimum MS, which strengthens when both intrinsic and extrinsic criteria are represented. Ultimately there is a limited range of obligations that are due upon the ascription of MS, so whilst the reasoning may be complex, there are finite limits to the different ways in which an entity with some levels of MS can be treated. This is an improvement over the ‘limitless degrees of MS’ approach.

Another possible objection to the MMS levels model is that unlike Strong’s particular developmental milestones, there are more dimensions to consider, and an as yet unspecified number of levels, which makes it more complex than Strong’s, though not so daunting as innumerable degrees of MS. Strong’s model is very specifically applied to the gestating human fetus. He does not consider whether MS might apply to other animals, the environment or human-like robots. Green argues that biological determinants will not help us make moral decisions, and it is a matter of choice (2001, 52). It is not choice but circumstances, in my view: extrinsic criteria that are relevant and warrant moral obligations. While my central focus is on pre-sentient human development, this model should be able to accommodate any entity to whom moral agents might consider ascribing MS, which is a major strength of MMS. Widening the parameters of

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consideration beyond humans necessitates additional complexity and additional criteria. However, if what results is closer to how we as moral agents ought to behave towards all others with a claim in their own right to be treated with particular consideration, complexity is a price worth paying.

4.4.2 Creates an invidious moral hierarchy

In Warren's view, two levels (partial and full MS) are not adequate to contain all the sentient beings that have some degree of sentience, human and non-human (1997, 86-87). She suggests 'a sliding scale of moral status enables us to avoid the distasteful task of sorting animals into those that have first-class status, those that have second-class status, and those that have no moral status at all' (Warren 1997, 87). However, others consider that far from avoiding a problem, this creates inequality in MS, opens the door to discrimination and is 'the foundation of the most objectionable forms of social, political, and legal discrimination' (Regan 2004, 234). In effect, any gradation of MS (and with so many different kinds of MS existing simultaneously, we then inevitably tend to compare and rank them, even if all *persons* have FMS) leads to what Singer might consider is its greatest danger, the creation of a moral hierarchy (1993, 20). However, as Singer observed, hierarchy based on intelligence, racism or sexism may be abhorrent, but one based on factual claims of differences between entities in capacity and ability is not. As Dwyer notes, 'many theorists simply assume that any 'grading' of human beings is unjustified and offensive', fearing it will lead to oppression of some sort, what he calls the 'invidious discrimination objection' (2011, 132). The danger of unequal MS is a need to avoid arbitrary discrimination and subordination resulting due to such rankings. But as Dwyer rightly argues, in response to this fear, 'It makes no sense to say, in effect, "historically humans have used morally irrelevant traits to rank people, so therefore we should not use a morally relevant trait to rank people"' (2011, 136). Wrongful application can happen in any system.

Hacker-Wright considers that the problem with multi-criterial accounts is that it 'creates a sort of moral pyramid wherein moral agents are on top and non-sentient living things are on the bottom' (2007, 454). But the problem lies not in the hierarchy itself, which is just a way of organising and expressing a problem in order to find a solution, but in meeting the challenge to use

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that hierarchy in accordance with moral virtues to produce a fair and appropriate way of assessing moral obligations. Dwyer considers that we have always made distinctions in MS, and thinks few of us confine the concept to human beings (2011, 135). This being so, the system we use must be adaptable to any entity under consideration. The important element is to monitor the criteria used for ranking to ensure that they are rational and appropriate. The difference between levels of MMS and moral hierarchy is that rather than using a phylogenetic scale, MMS suggests that we make sense of our obligations by mapping relevant criteria, and considering various entities in terms of the strength and types of criteria on which their MS should be ascribed. It is theoretically possible that something that ranks high on a phylogenetic hierarchy could share the same level of owed obligation as something much lower in the hierarchy. For example, a sentient fetus and a rare spider: neither are owed the most stringent level of obligation involving an absolute prohibition on killing under any circumstances, but though the spider's sentience may not be equal to that of the fetus, its rarity suggests that its destruction or use in experimentation must have a high degree of justification – potentially the same force of justification as that of the fetus (which in terms of abortion, is that the FMS of the pregnant woman is endangered by the fetus's continued existence).

The avoidance of hierarchy rather ignores the problems caused for many on the wrong side of any threshold for equal MS, such as an insentient fetus if the measure is sentience, or a severely cognitively impaired adult if it is personhood, meaning a particular capacity for rationality, self-awareness or intelligence. The great advantage of MMS is that it enables morally appropriate treatment of entities. If embryos have some MS, for example, there are limits to what they can be used for, as opposed to if they had none, but in cases of maternal-fetal conflict, we usually prioritise the greater MS of the pregnant woman, unless her reasons for abortion are prudential only and trivial in the extreme.

4.4.3 Lacks principle

Critics might consider the MMS approach is an attempt both to ascribe a minimal MS to reproductive embryos from an early stage, and to enable hESCR, abortion and the killing of embryos that are not required for research, and that therefore MMS lacks any underlying moral

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principle, it merely pays lip service to MS. As discussed in Chapter One (1.5), Harris and others consider according a gradually increasing MS to the embryo/fetus to be a compromise (1999, 300). An intermediate view does not share either the deontological principles of the conceptionists, who consider the human species to be unique and therefore protected from destruction from the earliest development, or the consequentialist principles of those who consider that only entities who are capable of self-awareness are of value. The closest moral theory on which MMS can be based is virtue ethics. My approach closely follows Hursthouse's "mixed strategy" view, ascribing a varying MS to the embryo/fetus (1987, 65-71), and modified by the liberal potentiality view she describes (1987, 73-87) which views the embryo as having a unique status from conception, although unlike Hursthouse, I am not opposed to creating artificial embryos specifically for research (1987, 87). Despite eschewing the concept of MS (Hursthouse 2013, 3431), others consider it pertinent (Hacker-Wright 2007, 459-468). In his view, what is lacking from other accounts is any recognition of the influence of the virtues to the empirical data. The virtues of justice and compassion help guide the weighting of criteria relevant to the MS of any given entity, and provide underlying principles.

The MMS view also aligns with three important principles with regard to early human life, as discussed earlier in this chapter: the Proportionality Principle, the Subsidiarity Principle (Devolder 2005b, 172), and the Principle of Waste Avoidance (Harris 2003, 368-9). Such close alignment quashes any accusation of lack of principle, in my view.

4.4.4 Leads to moral incommensurability

Another major criticism levelled at the multi-criterial approach is that application of multiple criteria leads, in hard cases, to 'moral incommensurability' (Callicott 1989, 50). Callicott believes that you cannot compare the worth of two entities rationally using different criteria (1989, 50). With no common denominator, and different types of MS depending on the entities considered, two similar claims from entities with differing criteria cannot be validated because they cannot be directly compared: the values for each criterion differ. The alternative is to jettison MS and use concepts discussed in Chapter Two (2.4), but as we have seen, this only exacerbates the problem

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of understanding and communicating clearly, and would not improve commensurability. I maintain that as MS is widely understood, and as “status” is commonly indicative of a relative term, it is preferable to maintain one term and consider it to confer a range of protection. When what is paramount is how moral agents ought to treat something that has or will probably have a welfare of its own, it is irrelevant whether the qualities it has are commensurable with the qualities of another different entity. One test for this could be when there is a clash such as when non-native animals are introduced to an environment and start to destroy the native plants. Our concern is not to specify which has the superior MS by comparing sentience with rarity value, but to decide what our relative moral obligations are to each and reconciling the two as a rational way of solving the problem.

4.4.5 Too inclusive

Some may consider that MMS includes entities that do not deserve our *moral* consideration. Harris would no doubt critique the ascription of MMS to the early embryo by arguing that as no embryo/fetus is capable of valuing themselves, it cannot matter to the embryo/fetus how we treat them; therefore, we have no reason to treat them as a moral entity (1999, 304). However, this fails to recognise that there are many instances in life when we do treat something in a particular way that is protective because it is right to do so, even when the subject cannot itself value life; for example, anencephalic infants or PVS patients. In the case of *In re. TACP* (Fla. 1992) 609 So. 2d 588, when the family of an anencephalic infant born in the USA wanted to donate the organs while they could still be transplanted into other sick children, health care providers refused to declare the child legally dead, and their decision was upheld by the trial court on the basis that anencephalics are not dead solely because of their congenital deformity (despite the fact they are permanently unconscious). Here the court was acting to protect a subject that could not and never would value life. The more ethical choice on a MMS view would have been to permit the transplant. Although alive, the anencephalic infant had no other claim to MS – her life was being thwarted by biology, she had no potential to become a person, she could not fulfil her function, and those with whom

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she had the closest relationship presumably wanted her brief life to be of moral value through helping other infants via organ donation, or the case would not have been brought.

In the case of embryos/fetuses, we ought to act not for the entity's current sake alone, but in consideration of their future sake – if they are likely to become moral entities. Before objections are raised that this is an argument based solely on potential, Dwyer makes the valid point that 'every attribution of moral status is based on the potential for being a certain way in the future' (2011, 119, original emphasis). The assumption is that whatever the criterion fulfilled (life, sentience, sophisticated cognitive capacity), it will continue into the future. We do this with infants, who though they are sentient and conscious, both good additional reasons not to harm them, are not yet persons in the Lockean sense. By considering how to ascribe MS, even when we do not know what others can or cannot sense, we must err on the side of caution, particularly in our treatment of severely cognitively impaired human beings or comatose patients.

4.5 Summary

In this chapter, I proposed a re-evaluation of MS which ascribes levels of MS based (following Warren 1997) on both intrinsic and extrinsic criteria, and that relate to the different types and strengths of obligations pertinent to the entity. An important benefit of MMS – that it can be applied to many different entities with vastly different criteria - far outweighs the simplicity and theoretical (if not practical) clarity that accompany a sole criterion. Considering multiple criteria has the advantage of permitting us to consider our moral obligations to a wide range of entities. However, this undeniably makes it more complex to apply. Having assessed the drawbacks to this approach, I have argued that MMS, while far from perfect, can provide reasoned guidance on how to treat the embryo/fetus. I suggest this is an improvement on previous theories, such as the Actual Future Principle (Harman 2003), the Ever-Conscious Principle (Harman 2007) or Actualisable Potential (Persson and Savulescu 2010), which ascribe retrospective MS to embryos that become persons, but fail to give guidance on how to treat the embryo *qua* embryo. Until we know what the destiny of the embryo actually will be, we cannot know what status to ascribe to them, therefore under

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these theories we would have to ascribe all embryos considerable MS on the basis that they *may* have an actual future. I submit that MMS provides a small step forward in our understanding. In the following chapter I will make suggestions for how the four different criteria relevant to the embryo/fetus - life, potential, function and relationship (as discussed in Chapter Three) - should be weighted, and show how this approach can be applied to the embryo/fetus, so that an appropriate level of protection can be ascribed.

CHAPTER FIVE: APPLYING MMS TO THE EMBRYO AND PRE-SENTIENT FETUS

*'To characterize our understanding of the moral status of the human embryo in this way is not of course to give a final answer on what uses can and cannot be made of it. However, neither is it an argument that we simply accept that we cannot know what the final answer is, nor get any closer to it. Far from it: it is an argument that we have an obligation to continue to engage in the debate, not only in order to give those with whom we disagree a fair hearing but just as importantly in order to determine as far as is possible what the moral status of the human embryo is.'*¹⁴

5.1 Introduction

My main research question is what MS ought to be ascribed to the embryo and fetus, which then has implications for how moral agents should treat them. In this chapter I will present my conclusions, based on the model presented in Chapter Three and the justifications in Chapter Four for re-evaluating MS on a multi-criterial, multi-level view. Strong's multi-level view of MS is based on milestones along one dimension, the biological development of the human entity (1997a, 60). The MMS model I propose views each criterion as having a range, which contributes to overall MS; however, these criteria do not all contribute equally to MS. The overall level of MS ascribed correlates to the obligations that moral agents then have, based on how it is just and compassionate to treat any entity with MS. As the quotation above suggests, this is an important debate and it is vital to keep aiming for a more fully explanatory position. MMS may not provide all the answers

¹⁴ Susanne Gibson (2007) Uses of Respect and Uses of the Human Embryo. *Bioethics*, 21(7) 377.

to the problem of ascribing MS and deciding what obligations we have towards the embryo/fetus, but it contributes to an ongoing reassessment.

In the following section (5.2) I will discuss how it is possible to allocate levels on a range within each criterion. In order to help us visualise multiple criteria and multiple levels, I then suggest a way of spider-mapping criteria for MMS in 5.3. Mapping helps us to compare the relative criteria of embryos/fetuses at different stages in their development. In order to illustrate that MMS may apply beyond the human species, a second map compares MMS across species: an embryo; the MRSA (meticillin-resistant *Staphylococcus aureus*) bacteria useful in research to develop a new antibiotic to treat this sometimes fatal bacterial infection (University of Cambridge, 2019); a chimpanzee (representative of mammals most likely to exhibit a high degree of MS); my family android (as discussed in 4.2), and a paradigm moral agent. Next in 5.4 I will indicate possible routes that might be used to weight criteria, which would resolve the complex issue of comparing the relative MS of different entities, helping to assess how relevant criteria relate to one another and combine together to ascribe MS. In 5.5 I discuss how a virtue ethics approach contributes to assessing how to correlate the appropriate level of obligation to any entity. Finally, in 5.6 I will apply MMS to the pre-individuated embryo, the post-individuated embryo, and the pre-sentient fetus, before summarising briefly.

5.2 Ranges within criteria

Given that multiple criteria contribute to overall MS, and that most criteria are not binary but comprise of a range, it is important to assess what strength of criterion pertains to a particular entity. We cannot assume that all criteria are equal contributors to MS either, some present stronger reasons for protection than others (Dwyer 2011, 181). For example, if a fetus does not possess the genetic potential to become a person (perhaps because of a chromosomal fault that means they will die before birth), a major factor in ascribing MS is missing, and the same is true of the life criterion. However, if the embryo lacks a relationship criterion because they are unwanted by their

progenitors, this is reversible if they change their mind, therefore it is not as fundamental as the two intrinsic criteria.

Each criterion may have a range of strengths. The possibility of differing levels of status within a *single* criterion has been acknowledged by several philosophers (Sumner 1981, 145; Quinn 1984, 50; Strong 1997a, 471, Tooley 2012, 134). When multiplied by different criteria, the complexities are obvious. As Warren points out, two levels (partial and full MS) are not adequate to contain all the sentient beings that have some degree of sentience, human and non-human (1997, 86-87), and with several different criteria included, this is even more true. Each level may necessitate different obligations; for example, it is reasonable to assume that the level of sentience a child possesses is stronger than that of a sentient fetus within their limited environment, and that there is a greater onus on protecting the child than the fetus.

5.2.1 Allocating scores within a criterion's range

Autonomy and moral agency are often thought highly important for MS because they differentiate us from other animals (Beauchamp 1999, 315; Dwyer 2011, 182). However, they are not so crucial if the concept of MS is about flagging that an entity deserves protection, as I contend in Chapter Two (2.2). Autonomous beings are probably able to protect themselves, or arrange their own protection, and are less likely to need help than more vulnerable entities (Dwyer 2011, 182).

To further explicate the idea of a range of levels within each criterion, I suggest how different stages of developing embryos/fetuses might increase by giving each a score. The scores can then be plotted on a spider map to help us visualise which criteria are active, and to what extent at each stage, in order to help a moral agent consider the obligations that should be entailed. First take the criterion of *life*. This does not merely describe whether something is live or inanimate. When we say something has life, we normally mean it is an organism (rather than its components) that ingests food, metabolises it for energy, grows, and may reproduce (Warren 1997, 25-26). This applies to a plant, an amoeba, an embryo and an adult human being; however, we are unlikely to consider them all as equal life forms. This implies that there is a range of life, it is not merely present or absent. Dwyer argues that the life criterion is about more than whether one is alive or not, 'we

might also ask whether all living beings are equally alive, or whether instead some manifest more aliveness than others' (2011, 70); it is not an all-or-nothing criterion. I consider that there are levels of life that vary between entities and stages of development to create greater obligations towards a person than an ant, and to an infant above an embryo. Goodpaster also considers that there must be differences in moral significance between life forms (1978, 322-3). The more complex and sophisticated the life form, the more aware (or fully alive, as we might think of the differentiation between the born and the unborn) they are of life's experiences, the stronger our obligations are. Dwyer argues that life is more than a teleological impulse or a will to live, and it seems reasonable to consider that it includes activity, for this is a common test for animal life – does it move when touched? However, I remain unconvinced by Dwyer's argument that energy, vigour, and having pursuits increases the degree of life, because this could preclude those with certain disabilities (2011, 69-70). His argument that children aged 6-12 manifest more aliveness than adults because they are more active and spirited, and therefore this should affect their moral considerability, seems to lack compassion for anyone not complying with this model (2011, 151-6).

There is a variety of protections that we might allocate to life's different manifestations along the range. We might tread carefully to avoid killing a bluebell in the woods, but the death of an amoeba in the laboratory would not bring the same sense of regret that the death of an embryo, or - rather more so - a human being would. A pre-individuated embryo in their first 14 days of life, with a relatively low chance of successfully implanting (if this is even a possibility), might arguably rate at one on the life range (out of nine). However, when implantation successfully occurs post-individuation, we might consider that they have moved up on the range to two. By the time the embryo has become a fetus, and the chances of spontaneous abortion after thirteen weeks drops considerably to around 1% (Kiefer 2015), their level of life may have increased to three. Not only is the fetus well-established, they are continuing to develop according to their teleology, and may be beginning to show recognisable infant characteristics such as swallowing amniotic fluid and sucking their thumb (Babycentre Medical Advisory Board, 2019).

An entity's *genetic potential* to become a person seems likely to follow a similar trajectory, increasing as that potential comes closer to actualisation, and the development of an autonomous

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person. I suggest a score of one out of nine for all pre-individuated embryos, whether reproductive, research, spare, frozen or to be aborted. This recognises the probable intrinsic presence of potential, despite extrinsic circumstances which might curtail it. Post-individuation (from 2-8 weeks), only the reproductive embryo is currently legally able to exist, and as 30% are lost (Larsen et al 2013) after implantation, both the post-individuated embryo and pre-sentient fetus score two on potential. The sentient fetus can respond to the world around them, and their neural and brain development suggests a more sophisticated life form that might be rated at three or four. Once born, they move and live independently, suggesting another increase along the range to five. Beyond this point, MMS may continue to increase until peaking in adulthood, or if I am wrong and Dwyer is correct, peak at age 12 and start to decrease afterwards (2011, 156). McMahan's Time-Relative Interest Account gives a more plausible explanation of why the loss of a teenager might be worse than the loss of a younger child, due to the stronger psychological connections the teenager has between their current self and all the goods of their potential future (2002, 165-174), which does suggest that 'life' continues to increase in strength into adulthood.

Relationship seems likely to have fewer milestones along its range; I have suggested seven. In my rationale it is first formed with the discovery of the existence of the embryo, particularly where conception is a project that has been actively pursued (whether through natural reproduction or ARTs), and represents a set of hopes and dreams. Two on the range might be post-individuation, when the heartbeat can be detected, which a parent considers as proof of another's existence. The pre-sentient fetus might score three when they make their presence felt, when the fetus is first 'seen' on an ultrasound scan, and the photograph can be distributed to friends and family, or at quickening, their first perceived independent movement, marking the physical reality of another being (to the pregnant woman, at least). The sentient fetus becomes visible to the public, and others may wish to interact with them, asking to touch the 'bump', so they may score four for increased social relationship; but it is birth that marks a major change in relationship as the two initial parties first meet, and other relationships with friends and relatives may form; this gives a score of five. As the child is able to respond to the love and care given to them, the score on the range moves up

to six, increasing to seven perhaps as the paradigm moral agent is able to form complex mature relationships.

The *function* criterion seems only to have four milestones that I can identify. The first is merely having a function, whether as a research subject or a reproductive aim. Two is met when the reproductive aim results in a successful birth. The third is when the entity is actively functioning, as a child, or when applied to artificial life forms. A score of four might apply when the entity is at the most functional time of its lifecycle, operating at peak capacity (when applied to the android). I have detailed the rationale for the scores on the four criteria applicable to my subject, the embryo/fetus.

For comparison, and to suggest that MMS is applicable beyond my subject to other entities on the periphery of MS, for example, bacteria useful to research, intelligent animals and artificial intelligence, I have given scores against criteria that may become relevant to the embryo/fetus: sentience, higher cognitive functioning (under which I include consciousness, interests, self-awareness – the personhood criteria) and moral agency. These scores are based on reasoned intuition, as an indicative example only, to demonstrate how MMS might be applied. To encompass the non-human subjects, I have used Warren’s Ecological and Interspecific Principles (1997, 166-170). I have allocated a range against sentience, higher cognitive functioning, moral agency and Warren’s two principles in the chart below, but I make no claim that any are definitive. This is an area for further development, particularly with allocating scores on each range for entities other than the embryo/fetus. Two of the additional criteria were considered briefly in Chapter One: sentience (1.5.2) and higher cognitive functioning (1.5.3). Moral agency and Warren’s ecological and interspecific principles are not pertinent to the embryo/fetus, so have not been discussed in depth in this work.

Moral agency has a small range. It is possible to assume that one either is or is not a moral agent, capable of acting to protect others of moral importance. However, it cannot be a bright line, as a teenager may be capable of acting to protect others in some capacities and situations, but not others; or an adult may be capable of thinking the way a moral agent should think, but through disability or other incapacity, be unable to take any necessary action. The family android may be

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capable of acting like a moral agent, but because this is pre-programmed rather than a natural volition, they perhaps ought not to score the same as an autonomous moral agent. And a chimpanzee might be capable of acting as a moral agent within their own community, preventing the mistreatment of another chimpanzee by others, but would not be able to act with equal moral agency to a paradigm human being. On this reasoning, I have assumed that there are two milestones – a minimal and a maximal moral agency. I have then suggested a score for each entity against the criteria and charted these in Figure 1. The scores for each criterion can then be totalled, as seen in the final column.

Figure 1: Scores within ranges of criteria ascribing MMS Blue denotes INTRINSIC CRITERIA, green denotes EXTRINSIC CRITERIA

PI = pre-individuation Post-I = post-individuation * Relationship only likely to apply when presence of embryo is known through IVF treatment

| Estimated range: | Life | Potential | Sentience | Higher cog functioning | Moral agency | Relationship | Function | Ecological | Interspecific | TOTAL |
|--------------------------|------|-----------|-----------|------------------------|--------------|--------------|----------|------------|---------------|-------|
| | /9 | /9 | /5 | /9 | /2 | /7 | /4 | /5 | /3 | |
| PI embryo (research) | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 |
| PI embryo (spare/frozen) | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| PI embryo (repro)* | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 4 |
| PI embryo (aborted) | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Post-I embryo | 2 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 7 |
| Pre-sentient fetus | 3 | 2 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 9 |
| Sentient fetus | 4 | 4 | 1 | 0 | 0 | 4 | 1 | 0 | 0 | 14 |
| Newborn infant | 5 | 5 | 2 | 1 | 0 | 5 | 2 | 0 | 0 | 20 |
| 5-year-old child | 7 | 7 | 5 | 6 | 0 | 6 | 3 | 0 | 0 | 34 |
| Paradigm moral agent | 7 | 9 | 5 | 9 | 2 | 7 | 3 | 1 | 0 | 43 |
| MRSA bacteria | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 |
| Adult Chimpanzee | 6 | 6 | 4 | 5 | 1 | 5 | 3 | 3 | 3 | 36 |
| Family android | 0 | 0 | 0 | 7 | 1 | 5 | 4 | 0 | 0 | 17 |

The totals of the scores begin to suggest that there is something wrong with this rather crude method. The highest score is unsurprisingly that of the adult moral agent. Close to the bottom of the scores, the MRSA bacteria scores above pre-individuated embryos intended for research purposes, that will abort (spontaneously or otherwise), or that are spare or frozen. However, one of the key elements of ascribing MS as discussed in Chapter Two (2.2.2) is that to qualify for any MS, an entity must have a welfare or sake of their own, even if that is future-based. An embryo, I have argued, is living and teleologically driven to fulfil their genetic potential to become a person with a valuable future. MRSA bacteria are living and teleologically driven to reproduce. They may be of use in research, but it seems to stretch credulity to consider that bacteria has any future good of its own that it will ever be aware of, and that would make its protection the action of a virtuous person.

The raw scores of the matrix following have probably resulted from the difference in range values, and also fail to take into account any variation in weight of the criteria. All criteria do not contribute equally to MS, which explains the slightly surprising relative placings of the totals in Figure 1 (the chimpanzee placed higher than a child, for example).

5.3 Mapping criteria for MS

Whilst there is nothing new about taking a multi-criterial approach dependent on both intrinsic and extrinsic criteria (Warren 1997; Green 2001, 49), the MMS view is a re-evaluation that not only synthesises multiple criteria with a spectrum of levels, but also draws on virtue ethics. My model depends on a range of levels within each criterion, linked to obligations according to the need of the entity at that point in its development, and based on compassion and justice. In order to consider what level of MMS to apply to an entity, it is important to decide which criteria are active, and pinpoint where they are in that particular range, given that criteria are not binary.

With multiple criteria and different levels to navigate, it seems that what is needed is the kind of ‘simpler road map’ that Carol Tauer refers to when critiquing the complexity of Warren’s multi-criterial theory (2001, 46). Tauer thinks that Warren describes so many different types of

criteria, all limited and qualified by the others, that it is easy to be overwhelmed. I suggest that by adapting a tool used in business to effectively assess product attributes that are of the highest value to customers, it is possible to create a spider map plotting where on the range of each criterion an entity lies as a starting point from which to assess which obligations are relevant. With intrinsic criteria on one side and extrinsic criteria on the other, this helps us to plot relevant criteria in an easy-to-view way. For the four stages of pre-natal development (the embryo pre- and post-individuation, a pre-sentient fetus, then, for comparison, a sentient fetus), I will discuss the obligations these criteria incur in 5.5. For comparison, and to illustrate that MMS can be applied to other entities, I have begun to sketch out how some other marginal cases may be similarly mapped. This has involved an intuitive and therefore rather arbitrary score for each entity on each criterion. One assumption that I have made for this illustrative exercise is that the range and weighting is the same whatever the entity, though this seems unlikely.

The advantages of this spider map are that you can clearly see which criteria are relevant to each entity, and compare the overall MS, which is determined by the area inside the plotted shape. In theory, this might enable us to compare the relative strengths of different types of MS for very different beings. To test this, the first map shows the comparative MS of early human development at different stages: a pre-individuated embryo (in orange), an embryo of around seven weeks (in blue), a pre-sentient fetus of 16 weeks' gestation (in maroon), and for comparison, a sentient fetus (in green). If an entity only scores on one criterion, this would not create an area showing MS, thus supporting the requirement that there should be at least two criteria to be sufficient for MS to be ascribed.

A second map, for comparison with other beings that depart from the paradigm (Sumner 1981, 129), plots criteria to map MS of MRSA bacteria, a pre-sentient fetus, a chimpanzee, a paradigm moral agent, and the family android (a robot with human appearance that lives as part of a human family, as discussed earlier). These maps are a starting point for discussion, and for illustrative purposes only. If further careful work can be done to define the different levels for each criterion, then despite the fact that we may be comparing different types of MS defined by different criteria across different species, we ought to be able to compare the different areas and work out

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the relative weight of the claims. The size and shape denotes active criteria from which it is possible to reason which differing obligations are due, and how strong they should be. One major benefit of this map is that it may help answer Callicott's (1989, 50) charge of moral incommensurability referred to earlier in Chapter Four (4.4) by enabling comparison of overall MS.

Mapping the development of moral status from early embryo to sentient fetus

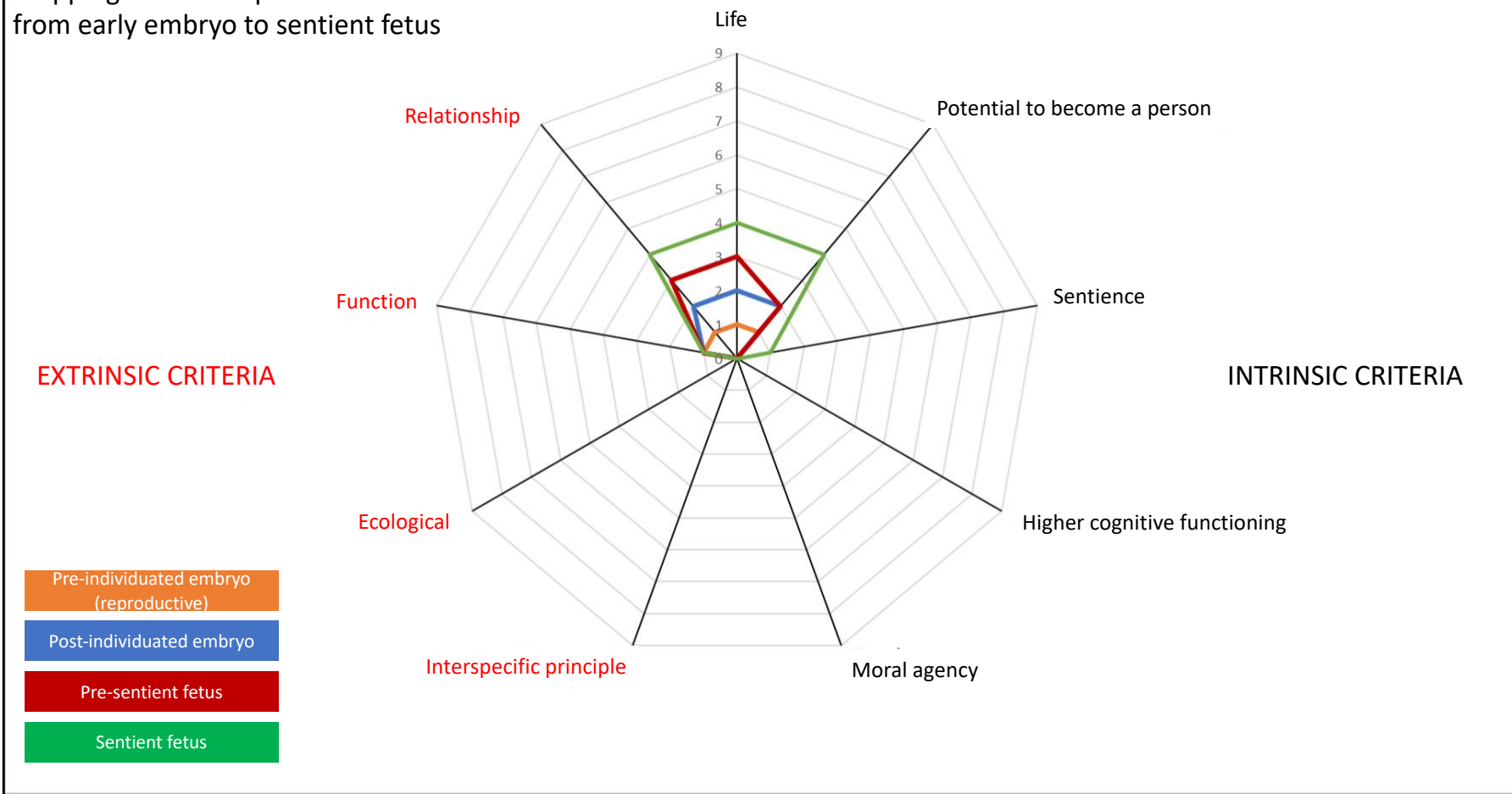


Illustration 1: A map of multi-criterial multi-level moral status for the embryo and pre-sentient fetus (adapted from Suffield 2016a, 19)

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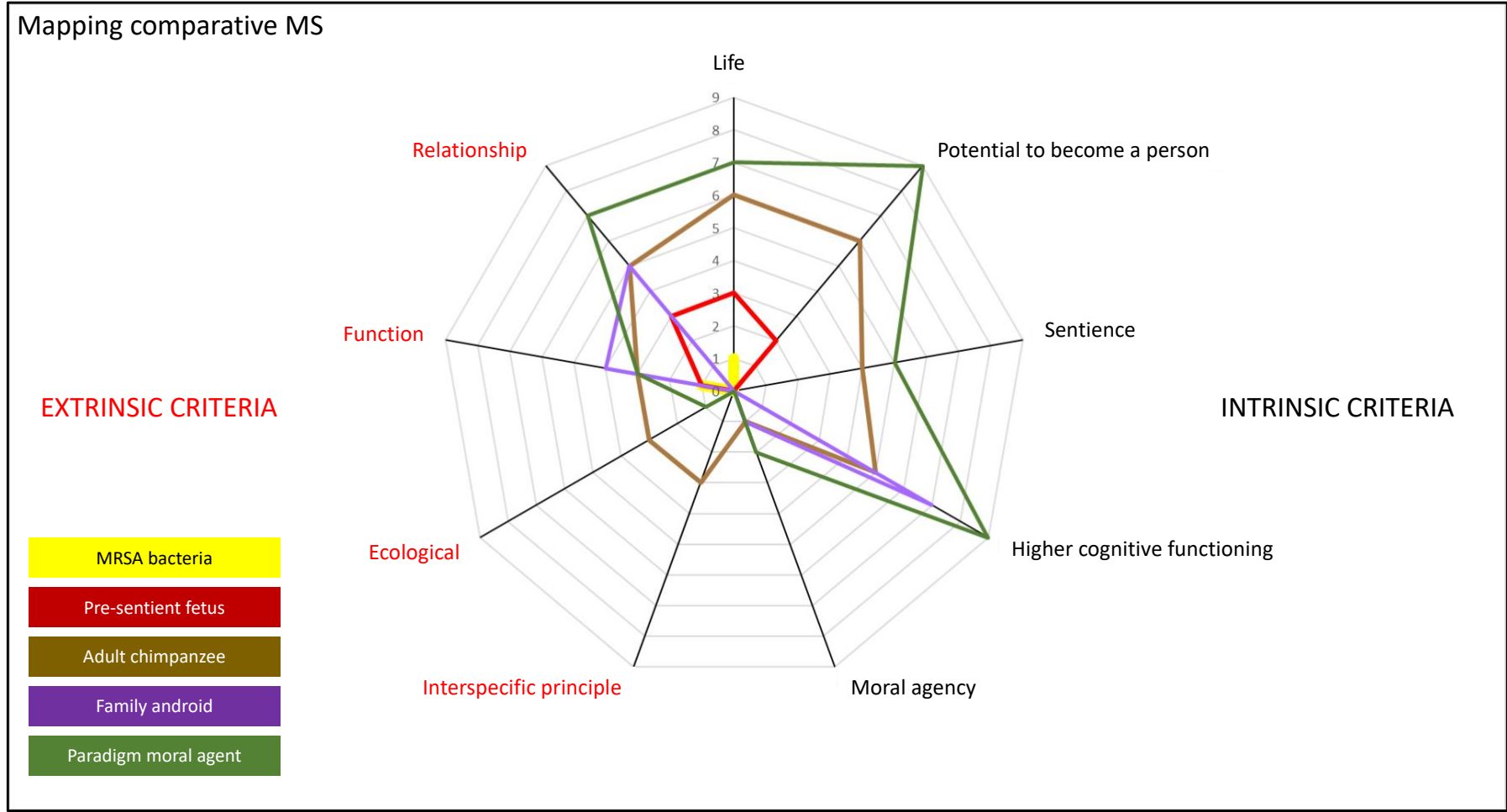


Illustration 2: A map of multi-criterial multi-level moral status to show comparisons between different entities

5.4 Weighting of criteria

A challenge to any multi-criterial approach is how to weigh the criteria relatively against each other, assuming that not all criteria contribute equally to MS. It seems probable that some criteria such as sentience and moral agency are greater contributors to overall MS than function or viability. This is because sentience is a capacity to suffer pain, and knowingly inflicting pain on another is cruel, so it is a fundamental criterion that denotes harm to an entity. Moral agency is often seen as the distinguishing capacity of socially-oriented persons. Such differential weighting requires refinement. Warren did not broach this subject specifically, though she states that each of her seven principles should not ‘violate’ (1997, 149) or breach the other principles but be consistent with them (1997, 152), or work within the limits of other principles (1997, 168 & 170). Dwyer suggests that for such reasons to be plausible, based on more than intuition, they ‘might have to be based on some assumptions over relative weight and the significance of change over time’ (Dwyer 2011, 141), but provides no fine detail. He considers it necessary to draw some gross distinctions based on reason, and applies a plausible explanation of relative MS for adults and children (2011, 145-187), but this leaves no explication of how it works for other entities with claims to MS: animals, severely cognitively impaired adults and, relevant to this work, embryos and fetuses. Warren cites Mary Midgley (1983) as identifying the complexity of trying to work out relative biosocial arrangements (1997, 133-134), and the obligations arising from different communities. Midgley considers that each culture and every individual must work out a map of principles for relating them, but even this does not fix priorities (1983, 30). To incorporate adequately all the reasons why two or more competing moral criteria should be exactly weighed, assessed and be assigned appropriate obligations is an incredibly complex field that exceeds the scope of this thesis. It would take several volumes to cover every entity that has a claim to MS and how these should be prioritised. However, I will propose some general considerations that may indicate some possible routes to resolution.

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With regard to embryos, although intrinsic criteria may be more fundamental to the ascription of MMS, as discussed in the previous sub-section, extrinsic criteria can make a difference to how much an entity matters. In order to avoid accusations of weighting being arbitrary and intuitive, given that there are many often competing factors to take into account, it might be possible to adapt another idea from business management in order to help decide how to prioritise. Using a decision matrix analysis (DMA) enables rational decision-making when many difficult-to-compare factors need to be weighed up (Munier 2011, 1-21). To use this approach, a matrix similar to Figure 1 could be used, listing the entities potentially to be ascribed MS as rows on a table, and the factors that contribute to MS (criteria) as columns. A score is then put against each criterion that an entity possesses to indicate where in the range it sits (as per example in Figure 1). It should be possible to allocate a weighting to calculate the *relative* importance of each criterion. For example, Life, Potential, Ecological and Interspecific criteria may have a weighting of one, but sentience, higher cognitive functioning and moral agency might be considered to be more important for overall MS and have a weighting of two or three. Each score on the range of a criterion could then be multiplied by its relative importance weighting. By adding the scores along the row for each criterion, a total score would be obtained, and the highest score would indicate relative ranking in levels of MS. Sumner (in justifying his preference for the phrase ‘moral considerability’) considered that every physical object has MS, and: ‘[m]oral status is a determinable whose values can be ordered along a continuum... it makes no more sense to say that a thing lacks moral status altogether than to say that it lacks shape or colour’ (1981, 26). I have argued that an entity must have a welfare or possible future wellbeing that justifies the protection that MS demands of moral agents, so I disagree that *every* physical object has some MS. However, there may be differences of opinion about the relative importance of each criterion. Even if an overall ranking was agreed, the scores for each criterion are likely to be very subjective.

An underlying assumption of the chart in Figure 1 and the maps is that the weighting is the same whatever entity is under consideration. However, the weighting of differing criteria is likely to vary depending on what type of entity is under consideration and may be as wide-ranging as the different entities under moral consideration (Dwyer 2011, 140). Under the MMS view, the embryo

is not ascribed FMS, because as McMahan succinctly phrases it, ‘many of the moral reasons why we have to treat an individual in certain ways and not treat that individual in other ways are given by that individual’s intrinsic nature’ (McMahan 2007, 171-2). Gibson argues that MS is relational, and subjective, for each of us would attribute different values to the adult human or embryo (Gibson 2007, 377), and this is perhaps even more true as the circle widens to include mammals, species and parts of the environment. We cannot rationally expect to come to a consensus, for it is affected not only by individual choice, but circumstances. The attitude of a prosperous Western person towards infanticide is likely to be markedly different to that of a poverty-stricken Asian woman for whom a female infant is another mouth to feed, with no prospects for economic independence.

Additionally, two beings of equal MS ‘might justifiably be treated differently because they have different interests’ (Dwyer 2011, 146). One creature might be more pain tolerant than another even if otherwise similar, but when comparing a lesser developed with a more developed life form, the latter have more ways of experiencing the world and being affected by it. More rational beings tend to find existence more fulfilling or more frustrating than less developed creatures (Sumner 1981, 143). A re-evaluation of MS must include not just several different criteria for MS, but consider the entity and its interests, and what kind of obligation we ought justly and compassionately to apply. These obligations may change over time, depending on the development of the entity and what protection is appropriate for its ‘needs’, while also giving due consideration to extrinsic criteria.

5.5 Correlating MS to obligations

Let us return for a moment to the discussion in Chapter Two (2.3) regarding Rachels’ (2004) and Marquis’ (1999) methods of reasoning about MS, by looking first at an entity’s characteristics and their moral implications, or at the reason for killing being wrong, respectively. If we merely focus on the entity’s characteristics, such as whether it is sentient and therefore can be harmed if pain is inflicted, we are in danger of missing the bigger picture and thinking about the conditions prevailing that may be causing the action. The MMS view considers that each of these approaches

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contributes to the truth: there are many factors that contribute to deciding how to act towards entities that have (or potentially have) a welfare of their own, but who need protection. In assessing the entity's characteristics, there are criteria that help us decide whether this is an entity that qualifies for our protection, but we must also consider any external influences such as the environment, and last but not least, the character of the moral agents making the decision. MMS stresses that we must consider our responsibility towards the entity for its own sake (where that does not clash with considerations to entities with greater MS), and be guided by the virtues of justice and compassion in assessing the obligations owed. Taking all these considerations into account, there is a finite number of ways that a moral agent can treat something ascribed a level of MS.

In Elselijn Kingma's opinion, determining whether or not something has MS tells us little about how much consideration, or what kind of consideration, it should be given, and there is room for variability in the degree of consideration (2017, 76). While agreeing that there is room for flexibility (a more positive interpretation of variability) in deciding appropriate obligations, by analysing why an entity has MS and seeing how that compares to other entities, I think MS provides much information about how much and what kind of obligations moral agents have towards an entity. For example, let us consider the MS of a five-year-old child. On the range of life, the child would score highly, she is close to the paradigm on the scale, so might score seven. Her genetic potential to become a person would also score similarly, given that, barring accident or illness, she is statistically very likely to continue into adulthood. She is fully sentient, which means that there is a stringent obligation not to deliberately harm or cause her pain. While she may not have fully developed her higher cognitive functioning, it is likely to be well-developed, and she may be capable of making some distinctions between right and wrong, although she is unlikely to be a moral agent. She is likely to have several strong and mutual relationships, and is fulfilling her function as someone's child and object of love. Our obligations towards her are as stringent as towards a paradigm adult, though due to her young age she is not autonomous, and any responsible moral agent is likely to take a paternalistic interpretation of FMS by protecting her for her own sake from actions she may wish to take (like running into the road) that moral agents know may be

harmful. If she fell into the water, we would have a strong reason to aid her provided our own life is not endangered. Of course, not every example is so clear-cut, but I will detail the obligations that MS determines for the embryo/fetus in detail in the section following, and argue that their MS indicates likely obligations, though these may be moderated by external circumstances.

Moral obligations include two positive responsibilities: a strong reason to aid and a strong reason to treat fairly. However, the onus is on negative obligations: presumptions against killing, causing pain or harm, experimenting on, or causing loss of liberty (Jaworska and Tannenbaum 2018, s. 2). This provides six overall obligations that can be applied together or separately at varying strengths: stringently (meaning that it must be applied other than in the narrowest circumstances, such as if the lives of a large number of people are at stake) (Jaworska and Tannenbaum 2018, s. 2.1a.), strongly or weakly, reflecting Deryck Beyleveld's view that '[t]he moral status of a being may be measured by the weight to be given to the duties of protection owed to it by an agent' (2000, 71). This weight can be shown through mapping relative to known quantities (such as an entity with FMS).

The role of MS is to make clear and sometimes expand the range of what counts as a moral subject that is owed obligations. Definitive conceptions of moral communities have been mistaken in the past, justifying slavery, genocide, and oppression on grounds of gender and sexuality (Singer 1993, 215). A re-evaluation of MS needs then to be guided by virtue ethics, which defines right action in terms of what a virtuous agent would do. This will ensure justice for all entities including fair distribution of goods, and compassion through consideration of individual circumstance, extending kindness where a strict application of justice might not. The focus then is on treating the entity as it deserves to be treated. This acknowledges the central contribution of a virtuous person's judgment of what comprises requirements of virtue, where the virtuous person is someone who focuses on living a morally correct life (Hursthouse and Pettigrove 2018, 1.2). A virtuous agent will harness the facts about a given situation with a sense of commitment to justice and compassion to guide the course of action to be pursued (Hacker-Wright 2007, 459). The concept of justice appropriate here is not that of legal rights, but about the fair treatment of non-reciprocal relationships, where one party may hold all the power and the other be vulnerable, yet still valuable.

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The vulnerable embryos/fetuses have no rights, but injustice is done if powerlessness is exploited, and moral agents must act consciously of this. Our guide should be that '[t]he virtue of justice requires me to have due concern for vulnerable things and creatures' (Hacker-Wright 2007, 465). Compassion is a necessary virtue to use for many of the same reasons that Warren considers caring to be integral to MS, to connect us with the world around us (1997, 137-147), as discussed in Chapter Three, 3.3. Avoiding cruelty is not enough to achieve a flourishing life, we need kindness, compassion and love to be guides too – relationships thrive due to these (Gardiner 2003, 299). Hacker-Wright considers that using clear-cut, decisive criteria for settling disputes about controversies regarding MS may be a strength, but may fail to acknowledge all the complexities of moral situations, which are not always clear (2007, 468). I maintain that we need empirical facts to guide our deliberations, assessing the criteria for MS is an important stage in our reasoning process. However, we must also focus on working out our appropriate standards of behaviour by demonstrating attentiveness to objects of moral concern, and with our ability to reason tempered by empathy (Gardiner 2003, 297).

5.6 Applying MMS to the developing embryo and fetus

In this section I will show how we ought to treat embryos/fetuses on an MMS view, and examine how this changes over the approximately six months' development time up to a point at which sentience¹⁵ is generally agreed to be present in the fetus. This will clarify what kind of moral obligation is relevant at each stage in each criterion, given the context applicable.

Legally there is a twofold approach to pre-sentient human life. Although technically abortion is illegal in the UK (Offences Against the Person Act 1861, ss.58 & 59; The Infant Life (Preservation) Act 1929, s.1(1)), if there are sufficient grounds under the provisions of the Abortion Act 1967, s.1(1)(a)-(d) it is decriminalised, so that in practice it is relatively easily accessible up to 24 weeks' gestation. The fetus has considerable protection after this period (usually concomitant

¹⁵ See Appendix 2 for details on dating sentience

with sentience and viability) other than in exceptional circumstances, when abortion may be carried out to prevent grave permanent injury to the woman's physical or mental health, to save her life (Abortion Act 1967, s.1(1)(b) and (c)), or if there is a substantial risk that the child born would be 'seriously handicapped' (s.1(1)d). *In vitro* however, there appears at first sight to be much greater protection of the early embryo, as there is no longer any clash with a woman's right to bodily integrity. For example, if an embryo is not to be implanted, it is a criminal offence to culture them longer than 14 days, or once the primitive streak has formed (Human Fertilisation and Embryology Act 1990, s.3). The law favours a fixed clear and binding rule to abide by, but moral obligations are not so clear-cut.

While all embryos share like intrinsic qualities, it is often the extrinsic circumstances, whether the embryo is to be used for reproductive or research purposes or neither, that have the greatest influence as we have seen. With constant advances in technological developments putting ethical boundaries under pressure, and the dialogue about embryos and stem cells often in the context of a potential cure for serious diseases, it is important that the reasons for protecting the human embryo/fetus are clearly mapped and explained. I will now discuss and justify the moral obligations we have towards early human development at three stages in pre-sentient life, on the basis of the criteria held at each point, the level of MS this ascribes, and which obligations are relevant.

5.6.1 Embryo pre-individuation

Consider five *in vitro* embryos all at six days' gestation, V, W, X, Y and Z. V will spontaneously abort so lacks genetic potential to become a person. W, X, Y and Z all are living and have the same intrinsic potential so ostensibly have the same minimum MS. W, X and Y are surplus to the reproductive needs of their progenitors, Z is a much-wanted reproductive embryo that will successfully implant and be born. W is surplus to current reproductive requirements so is frozen. X's progenitors have asked that the embryo should be destroyed. Although they have intrinsic genetic potential, the decision of their progenitors negates this as a factor for MS, and the only criterion they fulfil is that they are living. They have no relationship with their progenitors, and

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neither a reproductive nor a research function. Denied their potential, there is no second criterion so they have no MS.

Y's progenitors have given permission to use surplus embryos for research. They retain important value due to their unique totipotent cells which will be used in hESC therapy or research, and it is better to do some good than no good. While their genetic potential to become a person will be thwarted, they are alive, and fulfilling a research function that serves a useful purpose to society, providing both an intrinsic and an extrinsic criterion that together ascribe a minimum MS. Some consider that the potential benefit gained from research might even outweigh the potential benefit of a new life (Harman 2007, 207; Devolder 2012, 159). It is possible to argue that the research embryo cannot be harmed, either in the sense of being caused physical or mental pain, or by being deprived of a valuable future as a person, because external circumstances have stymied the latter. Any obligation we have is not due to the embryo's sake, because they cannot care what happens to them without the neural capacity to feel, or think or be self-aware. Therefore, whether they are frozen, destroyed, or used for research is immaterial to the entity themselves. The only restrictions are legal, or out of respect for the feelings of others who consider that this is a new human being or soul, or a feeling that there are limits to what should be done to valuable human material. However, on an MMS view, it has a minimum MS because they are alive and teleologically developing, and their research function will do what no other entity can: increase human knowledge for valuable medical purposes. Our moral obligations towards them are to ensure that the research complies with the Proportionality, Subsidiarity and Waste Avoidance Principles, as discussed in Chapter Four.

Z has the strongest MS, based on having the two intrinsic criteria (life and genetic potential), as well as a possible relationship with their progenitors, all at level one. At this early stage, the only progenitors who are likely to know about the existence of the embryo are those undergoing IVF for assisted reproduction, and for them the value of the embryo, representing the earliest stage of the fulfilment of their plans to have a genetically related family, is likely to be high enough to warrant the beginnings of a relationship, and score one on the range of this extrinsic criterion. In addition this embryo clearly has a reproductive function. With two intrinsic criteria and possibly

two extrinsic (if IVF), this embryo has above the minimum MS. Our obligations towards them are a weak presumption against interference: given that their progenitors' intention is to give birth to an infant, no moral agent should prevent this by intentionally killing or harming them in any way. However, because their MS is so minimal, this is easily overridden, so if the woman changes her mind about being pregnant, or discovers later on that the fetus is severely disabled or pregnancy presents risks to her own life, abortion is easily justified.

To ascribe differing MS to embryos with different end purposes initially seems illogical when the five embryos are essentially the same entity. A more plausible explanation of the differences between research and reproductive embryos is a multi-criterial approach that includes extrinsic criteria, such as function or relationship. External circumstances do strengthen the claim to a minimal MS more for one type of embryo than the other (Kingma 2017, 73-79; Lovering 2011, 98). Without the foresight of knowing which embryos will thrive, a constructive view is one that treats them as Strong suggests (1997a): respecting the possibility of their future, and conferring a limited protection on all.

There are several practical ethical questions regarding the MS of early embryos: whether it is ever ethical to experiment on embryos; whether it is morally acceptable to create embryos solely for research purposes; and the implications of commodification. In answering these, I will outline our obligations according to an MMS view. Fox and McGuinness (2016) note that the open-ended definition of 'embryo' given in the Human Fertilisation and Embryology Act 2008 has created two streams of embryo, categorised dependent on whether they can be implanted in the uterus (permitted) or not (including admixed embryos and those created through SCNT or iPSC) ('non-permitted' in the terminology) (Human Fertilisation and Embryology Act 2008, s.3(2)). The more precise embryo definition in the 1990 Act had been circumvented by technological advances, necessitating this amendment. They note:

Since 1990, embryos destined for human reproduction effectively count as human individuals once they are implanted and are entitled to greater legal protection than the pre 14 day embryo. More recently, certain sorts

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of embryo (hybrid or artificial) can be created under licence for research purposes but are ‘not permitted’ to be implanted in the uterus for reproductive purposes. Utilising such categorisations, law has effectively contained the subversive challenge of the embryo by classifying some as potential legal persons and others as mere research material. In so doing, law not only contains the liminality of the embryo but reifies the pre-existing legal categories to which it is assigned (Fox and McGuinness 2016, 205).

If they are right, then the challenge presented by new technologies in producing embryos by non-traditional means has been overcome by legal restrictions on their development that sharply divides research from reproductive embryos. Now, legally, extrinsic factors may control whether or not person potential is permitted to develop. The minimal MS shared by both research and reproductive embryos is curtailed for the former by the mandatory destruction at 14 days. Erica Haimes et al. share the view that status becomes context dependent, as ‘embryos are not fixed, universal biological entities but are defined by, and acted upon in relation to, their social context, that is, by their location in time and space’ (2008, 124-5). Extrinsic factors, including the law, have segregated embryos due to either their method of construction or their intended purpose.

When considering *in vitro* embryos and whether or not it is morally acceptable to permit research on them, the process involves their destruction because it necessitates extraction of stem cells that will normally cause embryo death, either by the extraction itself or mandatory destruction because the embryo cannot be reimplanted in a woman. FMS would protect its bearers from experimentation and destruction, under the stringent presumption against interference (Jaworska and Tannenbaum 2018, s. 2.1). However, the early research embryo has only a minimum claim to MS, as discussed above. Experimentation is permissible when sufficiently justified, though how we define what is ‘sufficient justification’ is problematic, as discussed in Chapter Four (4.2.4). Provided that the progenitors have given written informed consent to such use of the embryo (which ensures that any potential existing relationship issue is overcome, as well as fulfilling any

standard legal requirements), the entity itself cannot be harmed by suffering pain, only by deprivation of their valuable future. This is not negligible, in virtue ethics terms. This loss of life is to be regretted, even if the subject is unaware of the injustice (Hacker-Wright 2007, 453). Our obligation, then, is to ensure that research or therapy is justified by the benefit that is likely to be accrued that sufficiently (in the judgment of a virtuous person) outweighs the potential of the life to be sacrificed.

The current restrictions under UK law provide a firm basis to start from, with the HFEA monitoring clinical usage. A balance has been struck between limiting the usage of embryos to specific purposes while permitting research under controlled parameters (Human Fertilisation and Embryology Act 1990 and Amendment 2008, schedule 2, s.3). These currently require: work on embryo research to be carried out on licensed property and under the supervision of a responsible person (1990 s.12(a)); the HFEA to inspect activities or records (s.12(b)); prohibitions on money or other benefits being exchanged for supply of gametes or embryos (s.12 (e)), and also mandate careful record-keeping (1990, s.13(2) s.43). Without such restrictions there would be myriad implications: gametes and embryos could be handled by unqualified people for any reason they choose, with no restriction or record-keeping. They could be removed, combined and admixed with other species, even traded. This could bring huge risks to women's lives, particularly where extreme poverty might drive women to sell their gametes and undergo unsafe procedures to remove eggs, or gestate unsafe embryos, risking spread of disease, and possible interbreeding with no record keeping.

Examples of possible uses of embryos not important enough to justify their destruction might include non-essential cosmetic surgery (but this produces the difficulty of where the line should be drawn between prudential and moral reasons for surgery), any drug testing that could be achieved by other methods, and any manufacturing uses that do not qualify as worthwhile medical research. This would prohibit their use in art or jewellery-making (*contra* Bortolotti and Harris 2006, 29), food additives, or animal fodder, or any other purposes that contravene both the law and the MMS of the fetus. If adding embryos to a health drink was discovered to make skin look younger, this would fail to justify the ending of a life with minimal MMS purely for the purposes

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of vanity. However, if the same drink was proven to have a medically beneficial effect – lengthening life substantially – this might be considered a legitimate medical use: if this were a possibility, and became legalised, demand for research embryos would be likely to increase considerably. This might not be as ethically problematic if the embryos were created through cloning existing embryos (using non-permitted embryos which, legally, have no chance of a future), or using some of the many frozen embryos (with permission), as the likely fate of these embryos otherwise is to be wasted. We do not currently know whether it is physically possible for iPSC and SCNT embryos to viably develop into a paradigm person as it is currently illegal to permit development beyond 14 days, and legislation is not likely to permit that discovery soon. However, if this led to a situation where women felt pressurised to undergo regular invasive egg retrievals to extend society’s longevity, it would be of material concern both for the damage done to women’s health and the creation of an industry in human egg production. Drawing bright lines is notoriously difficult without being arbitrary (Martin and Lagod 1990, 262), so this is an area for further work to re-evaluate permitted parameters.

The virtue of compassion for others who have FMS forces us to weigh the loss of embryonic life against the many benefits of IVF treatment. These include: first, aiding couples with reproductive difficulties to have a genetically related child of their own; second, being able to select a healthy embryo through preimplantation genetic diagnosis to enable families to avoid some heritable diseases; and third, being able to use mitochondrial replacement techniques to ensure offspring will not suffer due to other hereditary conditions. In addition, much of the research using hESCs has been to seek treatments or cures for serious and life-threatening or life-limiting conditions such as cancer, Parkinson’s disease, and stroke (Savulescu 2002). The promise of future enhanced health benefits is now complemented by the possibilities offered by mitochondrial replacement techniques (The Human Fertilisation and Embryology (Mitochondrial Donation) Regulations 2015) and may shortly be complemented by genome editing techniques such as CRISPR-Cas 9 (Francis Crick Institute, 2019). The important difference these last two possibilities offer is that the embryo stands to benefit from research directly, as both techniques remove or

replace faulty genetic information that is likely to cause hereditary life-limiting morbidity, so enable future healthy prospects.

The moral acceptability of embryo research depends on the purpose of the research, as Devolder and Harris note:

A way to show respect to early embryos is by ensuring that they are used with care in research that incorporates substantive values, such as the alleviation of human suffering, which is in accordance with the widely accepted principles of beneficence, non-maleficence and proportionality (Devolder and Harris 2007, 164).

This applies to both permitted and non-permitted embryos, and gives value to all embryos without demanding that they are sacrosanct (Brazier 1988, 11). We are obliged to ensure the continuance and relevance of strong legal strictures on what constitutes worthwhile beneficial purposes, as discussed above.

Steinbock's concept of symbolic value (Steinbock 1992, 41), discussed in 2.6, precludes their use in 'unnecessary' experiments or for purely commercial gain. She highlights two key obligations that I agree that we have towards embryos/fetuses: to limit their use in experiments to those for which embryos cannot be substituted, and whose aims are to benefit people in important medical ways, as discussed under Proportionality in Chapter Four (4.2.4), and to avoid commercial use, to be discussed under commodification shortly.

Helga Kuhse and Peter Singer (1990, 74) have questioned why it is considered acceptable to experiment on sentient animals but not on totally non-sentient human embryos. The MMS view is that it is right to be less stringent about prohibitions against earlier embryos, for where it benefits those of greater MS for important medical purposes (and this is an area that needs to be more clearly defined), then it is preferable to use entities with lower MS to benefit those with greater MS. Given that certain animals may have much higher MS than early embryos, this is likely to make some animal research less easily justifiable too.

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It is worth noting that we also have an obligation not to allow experiments to take place on a reproductive embryo/fetus, because any long-term effects could affect their future life. The exceptions to this would include medical emergencies when fetal life is at risk and experimental surgery might be the only option, and this has the consent of the pregnant woman; or the aforementioned interventions such as mitochondrial replacement techniques where the embryo is the direct beneficiary. However, whether it is morally permissible for research to use embryos/fetuses that result from planned or spontaneous abortions ought to depend on whether parental permission is given (under the Waste Avoidance Principle it is preferable to make good use of this valuable entity).

Embryos used in research are likely to come from two sources: ‘spare’ embryos created for reproductive purposes and surplus to requirements, or artificially manufactured embryos created through SCNT or iPSC or similar techniques. Some accept the use of spare IVF embryos for research as justified by the Proportionality Principle, but consider that it is wrong to *create* embryos specifically for research. This is the position of many governments outside the UK, including America (National Bioethics Advisory Commission 1999). Holm opposes deliberate creation of embryos for research, considering it instrumentalisation (Holm 2003), which is failing to treat embryos with the respect they deserve by solely treating them as a means, not as an end in themselves.

Opponents of creating embryos specifically for research might argue that the use of spare embryos is justified because the primary intention is to create a child, the right and proper purpose of creating embryos (CDF 1987, s.3). They defend the change of use through the doctrine of double effect, which permits promoting a morally good action even if it has a morally bad side effect, provided that side effect was not intended (even if it could be foreseen) (McIntyre 2019, §1). The fact that remaining embryos are discarded and used for research is merely an unintended and regrettable side-effect of IVF (McIntyre 2019, s.5). Devolder is not convinced by this argument, because IVF could be accomplished without creating so many spares (in the UK over one million embryos were discarded between 1991 and 2005) (Devolder 2012, 156). If it is permissible to create spare embryos because it reduces harm to women by reducing the egg retrievals they

undergo with concomitant health risks, Devolder asks why objectors think it is not acceptable to create embryos for important biomedical research, and to develop treatments for currently incurable diseases (2012, 156). She plausibly argues that it is ethically sound to create embryos specifically for research on the grounds that it is beneficent to potentially benefit thousands of others, and if it is permissible to use spare embryos, it must be possible to use created ones on the basis that the benefit outweighs the harm (Devolder 2005b, 174; 2012, 142). She also queries why sacrificing embryos is acceptable to benefit infertile people to have genetically related children, but not to benefit ill and injured people (2005a, 366). In her view '[s]aving lives is more important than creating lives' (Devolder 2012, 159). This may be true in an overpopulated society, but not in all, and for those people who desperately want to have genetically related children, this argument would not be persuasive. Devolder holds that beneficence and proportionality outweigh the moral costs of destroying research embryos, and if these justify the use of discarded embryos they should also justify the use of created embryos (2012, 143). Under MMS, spare embryos initially had a minimal MS because they had life, potential, and a reproductive function. Their intrinsic potential to become a moral agent has been removed through change of circumstance, and their function has changed to research, reducing their MS. The change of circumstance has removed the weak obligation not to experiment on them that they would have had otherwise, and the MS is at a minimum. Their use must be in accordance with Proportionality. Thus, MMS accords with Devolder's view rather than Holm's.

Another objection often raised against creating embryos is that it may create further demand for their use, and weaken efforts to minimise discarded embryos. However, HFEA figures suggest the former has not happened.¹⁶ In the UK from 2016-17 only 87 embryos were created specifically for research (Suffield 2018a), a drop from the 183 embryos that were created in 2014-15 (Suffield 2016b). Harman points out that the benefits of hESCR do not come from a single embryo, many must be destroyed to gain the benefits (2007, 208-9). This may be justified by the good for whoever

¹⁶ Based on two Freedom of Information requests to the HFEA, one in 2016, one in 2018. See Appendix 3 for 2016-2017 figures.

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will be helped by such research, though Harman thinks not (2007, 208). Her reasoning is if it is impermissible to sacrifice one healthy person in order to benefit five others with organ failure, then it is wrong to sacrifice one embryo to help others. However, this analogy would only apply if the embryos have equal MS to those likely to benefit, which I dispute. In addition, over two-thirds of all embryos would not have an actual future because they will spontaneously abort.

Commodification of the embryo is ‘to treat it as if: (1) it has a price; *and* (2) it is fungible [exchangeable into a product that can be bought or sold]; *and* (3) it has only instrumental value’ (Wilkinson 2007, 286). Commodification is often used as an argument against hESCR on the basis that it should not happen to the human body even in embryo form, because this compromises human dignity: that which distinguishes us from other species and forms the basis of human rights (Brownsword 2003, 27-28). Given that a puppy is sentient, able to move around independently, and able to conceive and carry out basic plans such as chasing a bird, it seems likely that many might agree that a puppy has a higher level of MMS than an embryo, yet they are regularly commodified. In fact, many would never exist if there was not a profitable market in selling puppies. The third requirement of Stephen Wilkinson’s (2007) definition above, arguably may not be fulfilled in the case of a puppy, as some of us consider that its life is more than merely as a means for us, it is an end in itself. Any embryo that is either created or donated for scientific research under current legislation will never be an end in themselves, but they still have some intrinsic value (they are alive and their potential is of great scientific value), as well as an extrinsic function. This grounds a minimum MMS, raising them above the status of property and meaning that they do not merely have instrumental value. There has to be good moral reason to differentiate embryos from a commodity such as dog food; as Noam Zohar puts it so aptly, ‘[t]he discomfort many of us feel when such a use of embryos is suggested reflects an intuitive sense of their value’ (2015, 57).

While conceding that instrumentalisation under justifiable conditions is permissible, and it is not always wrong to destroy embryos if their use benefits society, I would further suggest that treating research embryos as property in respect of putting a price on them would not comply with our obligation to their minimum MMS. However, whilst there are limits and this is not an entity that should be traded, nor are they individuals capable of controlling their own fate – they are

subject to their progenitors' wishes, their own teleological function (or malfunction if there are morbidity issues), and external circumstances that affect all, such as illness, accident, or natural disasters.

The MMS view follows Strong in considering that an embryo should not be viewed as property, something we normally think of as the owner's to use and abuse. Apart from denoting ownership, property law covers the rights to possess, dispose of, use, enjoy and destroy (Strong 1997a, 473). This is a difficult legal area, however. If embryos are used for research then in economics there is an implied price that will reflect transportation costs and who controls their use. Sarah Devaney (2012, 107) argues that once they have been donated for research, in UK law embryos assume the status of property and recompense can be made for them. She considers it appropriate that the status of property should extend to research embryos, following the status bestowed on gametes in *Yearworth v North Bristol NHS Trust* [2009] EWCA Civ 37, where the Court of Appeal ruled that sperm stored for six men was owned by them, and they could be compensated for its damage. This is because 'where the progenitors of embryos no longer intend to use them for reproductive purposes, instead deciding to make them available for SC research, those embryos are property for which their providers should be fairly recompensed' (Devaney 2012, 110). Devaney argues that anonymous donors should be paid for directing their cells to research once no longer to be used in a reproductive setting (2012, 120), taking into account the specific circumstances – time, inconvenience, travel and risks incurred (particularly for egg donation which is an invasive medical procedure). This can be compared with compensation awards for body parts in personal injury cases.

This raises the objection that payment may induce people to create further embryos for research. Whilst gamete donors should be fairly compensated for expenses and the risks undergone, in creating a market for embryos and commodifying them we fail to fulfil the obligation to treat the embryo fairly (as outlined earlier). It ignores the fact that the research embryo remains a unique and totipotent piece of biological material (whose lack of specialisation enables the cells to be reprogrammed into any other body part, a potency that disappears before 14 days). For this reason,

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they are of higher moral value than other human parts, and of considerable value to medical research.

Devaney thinks that concerns regarding commodification can be alleviated via regulatory systems (indeed, this has worked well in the UK through the Human Fertilisation and Embryology Acts 1990 and 2008), and that this enables research embryos to be regarded as property, though reproductive embryos are not (2012, 110; Singer and Wells 1984, 98). However, classifying any research embryo as property downgrades the value that the entity can make to a tiny but significant contribution to an important human endeavour - medical research. Once they become property, then we erode all public perception of their moral value, and by permitting financial compensation they are objectified. Strong (1997a, 474) thinks, rightly, that regarding embryos as property is not consistent with any degree of MS and we should avoid the language of property rights, a view Patricia Martin and Martin Lagod agree with: '[t]here is a qualitative difference between the pre-embryo and other 'things' recognized as property' (1990, 270).

Martin and Lagod (1990, 261 & 276) further suggest that there ought to be a *sui generis* status that gives value and a frame of reference, without risking misunderstanding. This avoids having to label embryos/fetuses as either a human being (ascribing life protection and a need for someone to safeguard them) or property (giving no protection), which are both problematic. The right to reproductive freedom should give progenitors fundamental rights to make decisions regarding the early embryo (especially their future life possibilities), and research protocol demands informed consent of the research subject or their proxy (Martin and Lagod 1990, 300). Mary Ford endorses the in-between status, because as liminal entities that are neither fully human nor fully alive, property nor human beings, 'embryos and foetuses are neither legal entities nor absolute legal nonentities - neither fully legally-present nor fully legally-absent' (2009, 22). This middle way, in effect, reflects what has happened in the UK through "special status", limiting the usage of embryos while permitting research under controlled parameters (schedule 2 in Human Fertilisation and Embryology Acts 1990 and 2008), and setting up the HFEA to monitor and license technologies in the public interest, to ensure responsible use.

Ford claims that courts in the UK have made it clear that they do not consider frozen embryos to be property in cases such as *Evans v Amicus Healthcare Ltd* [2003] EWHC 2161 (Fam), where there was a dispute over which party had property rights over their frozen embryo, and it was held that there is no property in the embryos created, as embryos are different from mere property (*Evans v Amicus Healthcare Ltd* [2003], §219, §280, cited in Ford 2009, 23). This clearly differentiates property rights in embryos from gametes owned by their donors. However, Ford questions the basis of the “special status”, and argues that it cannot be based on potentiality, respect for interests, special relationships or dignity. She concludes that the law has failed to come to terms with a being that transforms, like the embryo/fetus. In cases where the two progenitors do not agree on the embryo’s treatment, for example, if embryos are frozen then the relationship fails, or one partner dies without making provision, problems can still arise if only one party then wants to implant the embryo (as the European Court of Human Rights upheld in *Evans v United Kingdom* App. No. 6339/05 [2007] ECHR 264).

As a by-product of the IVF process, spare embryos are destroyed or kept frozen around the world in hundreds of thousands. Devolder cites the US as having 400,000 frozen embryos in storage (2012, 152); in the UK the HFEA were unable to identify the total number of embryos in storage, but the total number stored from cycles over five years from 2013-2017 was 182,210¹⁷ (Suffield 2018b). Around 50% of even top-quality frozen embryos die in the defrosting process (Devolder 2005a, 369). If research under suitable restrictions guided by the Proportionality Principle is a moral good, a view I concur with, it is surely better that these embryos are used for this purpose than wasted. Life, however short its cycle, then has some purpose rather than none.

Given that research reveals that only a small percentage donate embryos for hESCR (McMahon et al. 2003, 873), this would require a significant re-education process. Devaney (2012, 127) reports that the Human Tissue and Embryos (Draft) Bill 2006-7 asked for consent to any embryos or gametes still in storage at end of the statutory storage period to become the property of HFEA, then used for research. But this was rejected because it meant that patients had to decide

¹⁷ See Appendix 4 for details

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the fate of spare embryos before their own treatment rather than after. In her view, '[t]he resulting default position is that where no decision is made, this potential raw material for SC research will be destroyed, a position which shows a disregard for a value of any kind for these entities' (Devaney 2012, 127). If donors were consulted again after the birth of their first offspring, and again after a second, they may be more likely to donate spares to research (McMahon et al. 2003, 874).

The embryo is not yet formed enough to be an identifiable individual, but to paraphrase Lockwood when talking about the validity of experimenting on a miscarried fetus, their use for the benefit of others might give some meaning to their brief existence (Lockwood 1988, 209). The destruction of embryos without using them for reproduction, therapeutic use or research, is the most immoral position, because there is no benefit to be had. Unlike abortion cases, where a woman's autonomy is compromised by the fetus's existence, or research, where there may be potential benefits to society, there is no justification for killing the embryo before some purpose is fulfilled, and it is a waste of a precious resource (Devolder 2005b, 184).

5.6.2 Post-individuation (embryo two to eight weeks)

Marquis argues that individuation makes a key moral difference (Marquis 2007), an argument I disputed in Chapter One (1.5.1). The difference is that we are now focused solely on obligations towards the reproductive embryo, as research embryos must by law be implanted, frozen or destroyed by the 14th day or appearance of the primitive streak (Human Fertilisation and Embryology Act 1990, s.3(4)). However, as I will be discussing the implications of the extension of this research period in Chapter Six, at the end of this section I will consider how our obligations to a research embryo during this time period might change from those due to an embryo pre-individuation.

Successful implantation increases the potential of the embryo to become a person – embryo loss figures reduce from 70% to 40% after this.¹⁸ It is difficult to separate consideration of the developing fetus's biological life from considerations of their potential, as the two are so

¹⁸ See Appendix 1 for pre-natal loss figures

interrelated. Referring back to the spider map in Illustration 1, this means that life has moved up to level two on the map. Gastrulation (when the single-layered blastula reorganises into three layers after the formation of the primitive streak, and organs begin to form) is the stage that some view as transforming the cluster of cells into a single heterogeneous creature, and the most important change of substance in human life, for though human life is present at earlier stages, gastrulation is the threshold for human existence (Smith and Brogaard 2003, 63; Wolpert 1991, 12). In their view, both biologically and metaphysically this marks the beginning of an identifiable individual. Certainly there is a confluence of changes around this point that seems to justify the increase in level on the life criterion, because they are now a distinguishable entity that is not just functioning as an organism, but beginning to develop separate organs.

At Day 17/18 neurulation occurs, when the first folds in the neural groove are seen (Openstax 2016). By days 22-23 this develops into neural folds which fuse and form the neural tube, the antecedent of the spinal cord, and the heart begins to beat (DHSS and Warnock 1984, 59 §11.5). This is the first bodily function, seen as a key criterion by some because it begins to seem real to a parent when they can hear an individual and separate heartbeat (though this is not likely to be detected by stethoscope until several weeks later) and realise that there is another individual developing (Haines et al. 2008, 118). By days 40-43 the rudimentary brain begins to develop. Basic brain activity can be detected from six weeks (Brannigan 2004, 48). There are many biological changes in the early embryo/fetus but there is no point comparable to fertilisation, at which there is a change of substance (Gómez-Lobo 2005, 107).

By the time the embryo is eight weeks, they are recognisably human, with a distinctive head, four limbs and two eyes (NHS Choices 2017a). Gastrulation, heartbeat, and the beginnings of a physically recognisable form all indicate successful life developing, and contribute to an increase in the level of life, plotted as level two in Figure 1. Their function is as a reproductive embryo/fetus, located *in vivo*. Due to this, the embryo is dependent on the pregnant woman's health and willingness to host them for nine months. The majority of abortions occur during the first ten

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weeks,¹⁹ and can be administered medically, no invasive procedure is required as swallowing pills will suffice (NHS 2016). An unwanted embryo has the same still (albeit relatively low) MS as one that is wanted, given they are alive and have genetic potential, but if conflicting with that of a woman with FMS, the woman's status will override the embryo's because '[t]he reason not to interfere with beings with FMS is stronger than the reason not to interfere with beings that have some, but not full, moral status' (Jaworska and Tannenbaum 2018, s.2.1c). The same applies if screening for abnormalities through amniocentesis indicates genetic defects. The MS of the embryo/fetus does not change unless the defects are severe enough to prevent life's development, and if so then genetic potential decreases too. Any decision of the progenitors, who have FMS, will override the weak (or non-existent) MS of the embryo.

If pregnancy is wanted, the obligation owed to embryos then is a (still weak) presumption against interference. We must do no harm to them (and the only kind of harm that can be done pre-sentience is actively preventing their development into the kind of entity that has a valuable life). Such harm would also involve harming the pregnant woman with FMS (though it is less likely to affect her continued life), so it is difficult to separate our obligation to her from that owed to the embryo/fetus. However, this obligation is easily overruled by the wishes of their progenitors. The woman herself could harm the embryo/fetus through reckless driving, substance abuse or refusing medical treatment right up to birth, but whether or not it would be right to limit her autonomy by insisting on her fulfilling an obligation to the embryo/fetus is a discussion for elsewhere.

If it becomes possible to extend the life of an embryo *in vitro*, biologically by the development of an artificial womb, and legally by the extension of the 14-day rule, this may enable greater consideration of the MMS of the embryo/fetus. As embryos would be cultured *in vitro*, their MS would no longer be dominated by the woman's overriding MS and right to bodily integrity. Experimentation without the subject's or their progenitor's consent is one of the key areas that MS normally protects against. The progenitors, having granted written permission for research, are out of the equation. The responsibility for treating the embryo with some measure of MS would

¹⁹ 80% were carried out under 10 weeks (Department of Health 2017, 4)

lie between the researchers and the HFEA, the monitoring authority. At this stage of development, the embryo has no physical needs other than life support, and still lacks a functioning sensory system, but they are living and have potential, which means that moral agents have obligations towards them. As a ground-breaking research subject, they have a strong claim to the research function, which might (if ectogenesis becomes possible) extend to a reproductive function too. Our obligations definitely include a positive reason to aid. It is important to acknowledge that this is a living entity with intrinsic value, and we should be guided by compassion towards them.

There is even greater responsibility to ensure that the experiments and projects they are involved in are absolutely necessary, that only the minimum number of embryos required are being utilised, and that the Principle of Proportionality still applies. Given that it will be rarer to have *in vitro* embryos at this age (as it seems likely that permission to extend research post-14 days will have stricter rules than currently), and the aim will be to learn from them, the onus will be on preserving their lives for as long as it is legal or possible to do so.

5.6.3 Pre-sentient fetus (nine weeks to c.26 weeks)

The embryo becomes a fetus at the end of week eight. The major body systems are still immature, but they have basic form and function (NHS Choices 2017a). Fetal movement becomes more important as an indicator of their individuality (Martin and Lagod 1990, 263). There is a surprisingly wide window when experts consider that sentience may start: by week 13, sensory organs and portions of the nervous system have formed (Lockwood 2001, 269), but few scientists consider that the fetus is capable of feeling pain due to lack of connection between the thalamus and cortex which probably happens around 24 weeks or later (Royal College of Obstetricians and Gynaecologists 2010, viii), certainly by 26 weeks (Derbyshire 2006). Ultrasound scans during this period enable women and partners to see and receive a photograph of the fetus *in vivo*. Perhaps it is a case of “seeing is believing”, but socially, this is when many people start to consider the embryo/fetus as a future part of their community (NHS Choices 2017b). Once they can easily be identified as a developing human embryo/fetus, an instinctive societal protective urge is activated, because their future can be envisaged. I estimated the increasing level of relationship on the map

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at level three due to increased awareness from ultrasound scans and quickening. Quickening, which in early English church law was thought for many years to be the indicator that a fetus ought to come within moral consideration, occurs between 16-20 weeks. Independent movement is good reason for another increase in level on the life criterion because it demonstrates that the individual is separate from the gestating woman, with a separate will to live. However, movement occurs before it is sensed by the pregnant woman, and it may be reflexive rather than a deliberate act consciously willed.

The increase in probability that this fetus will achieve their potential to become a person justifies another jump in level to two on the map. Lockwood views brain birth as the mirror determinant to brain death (which he acknowledges is disputed between experts, with 17-26 weeks being the best estimate), because '[o]nly with the dawning of brain life do we genuinely have "a human being with potential" – specifically and crucially with the potential for personhood', and before this point is reached abortion is equivalent to contraception in his view (Lockwood 1988, 208-9). This may affect the later stages of the pre-sentient fetus. The whole area of medical research is inconclusive on when various developmental points are reached, particularly sentience and consciousness (and whether the two can be separated) (RCOG 2010). Around 24 weeks, the fetus is considered viable in the Western world, capable of surviving outside the uterus with medical support (RCOG 2014, 7). After this point, under the Abortion Act 1967 s.1(1)(b), termination is only legal where necessary to prevent grave permanent injury, or under s.1(1)(c), if the continuance of the pregnancy involves a risk to the life of the woman greater than if the pregnancy were terminated, or under s.1(1)(d) in the case of 'serious handicap' (sic). At birth, even the very premature infant is accorded all the MS that would be accorded to a full-term infant, possibly before they develop sentience at up to 26 weeks (see Appendix 2). There is a strong reason to aid the infant, and the medical costs of days in intensive care or high dependency cots, plus any emergency surgery or drugs required to sustain such early life far exceed the medical needs of full-term infants. We might question why the MS is so changed by independence and birth, but this is further proof that extrinsic factors have a strong influence. Whether this is because a prematurely born infant is now present in society, or independent of their gestational parent, or both, is a moot

point. If the fetus is still *in vivo* and pre-sentient, they are rapidly developing and physically similar to a newborn infant. However, the predominant instinct once born is to fight to save their life, unless they are obviously suffering.

Our obligations towards this entity under MMS are increasing in strength, to the point where not only must we not wilfully cause the fetus any harm (by preventing their further development), there has to be a very strong justification to destroy them, such as risk to the life of the gestating woman. There is now a fairly strong obligation to aid such an entity: if the indications are that birth is imminent, the fetus will be administered drugs to develop their lungs. However, it is a difficult balance between prolonging life and giving quality of life as the risks of long-term disabilities for such premature infants are high (Saigal and Doyle 2008). The Charlotte Wyatt case demonstrates this (*Wyatt v Portsmouth NHS Trust (No 3)* [2005] EWHC 693 (Fam)). A premature infant was born with heart and lung defects and highly dependent on medical support. Doctors sought not to resuscitate her again if she died, but the parents tried to overturn this court order to give her every medical chance of survival, and the judge declined the application at first instance (though the Wyatts successfully appealed and Charlotte is still alive, though severely disabled). Public opinion often sides with the parents in such cases, and a compassionate moral agent concerned for both the parents and the life of the infant may agree. However, where continued life requires constant medical interventions (denying others in need) and causes suffering, the virtue of justice may prevail.

5.7 Summary

This chapter began by describing how ranges within criteria work, which enables us to map criteria and see how this enables comparisons to be made between quite different entities. I suggested ways that criteria might be weighed against each other, and argued that a close assessment of strengths of criteria helps us to decide which obligations are relevant, and how strongly they ought to be applied. I then detailed how this applies to the embryo and fetus in pre-sentient development. In the following chapter, I will develop this further to discuss how this applies to ethical dilemmas,

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in particular the potential extension of the fourteen-day rule, development of artificial wombs, and the implications for genome therapy. This will demonstrate that this re-evaluation of MS has important practical applications, fulfilling one aim of this thesis: providing the basis for how we ought to treat the embryo/fetus up to sentience.

CHAPTER SIX: PRACTICAL APPLICATIONS OF MMS

*'[P]eople generally want some principles or other to govern the development and use of the new techniques. There must be some barriers that are not crossed, some limits fixed beyond which people must not be allowed to go.'*²⁰

6.1 Introduction

In this chapter I will undertake three case studies in areas that raise ethical dilemmas, and show how MMS helps us to negotiate moral conflicts in practical scenarios. I will consider areas that are particularly relevant to developing humans up to six months' gestation: first, whether the 14-day rule mandating the destruction of embryos in research should be extended; second, what the implications are if ectogenesis becomes practicable; and third, what guidance MMS would bring to human germline gene editing. In each of the following three sections, I will begin by describing the background and development of the issue highlighted. I will then discuss the ethical issues raised relevant to the MS of the embryo/fetus, before discussing how the MMS view with its virtue ethics framework helps to resolve the issues. I then summarise by drawing together how MMS helps us to navigate emerging technologies as our obligations change towards the developing embryo/fetus.

²⁰ Mary Warnock (1984) Foreword to *Report of the Committee of Inquiry into Human Fertilisation and Embryology*. Cmnd 9314. London: HMSO, 2 §5.

6.2 Implications of extending the 14-day rule

6.2.1 *Background and context*

It is currently a criminal offence under the Human Fertilisation and Embryology Act 1990, ss. 3(3)(a) and 3(4), to keep a human embryo alive *in vitro* beyond 14 days, or after the appearance of the primitive streak (stipulations referred to as ‘the 14-day rule’). This time limit was set on the recommendation of the Committee of Inquiry into Human Fertilisation and Embryology, chaired by Mary Warnock (DHSS and Warnock 1984, 66, §11.22), which was set up to examine the ‘social, ethical and legal implications’ of the then newly-developed field of ART. It set out proposals for public policy that struck a compromise between permitting limited embryo research, and not causing public outrage by breaching human dignity. It did not answer the age-old conundrum of when life begins, nor was 14 days perceived as ‘the onset of moral status in human embryos’ (Hyun et al. 2016, 170). By Warnock’s own admission, the reason behind selecting this specific cut-off point was less about biological significance than pragmatic decision-making, showing that a line could be drawn and adhered to, without creating a slippery slope that moves as technology evolves (Warnock, 2016).

Rather than pick a stage in embryonic development (when there is no single identifiable biological stage beyond which it clearly should not be kept alive), Warnock was determined to set a limit of a number of days after fertilisation, and 14 days had originally been mooted in the US in 1979 (Ethics Advisory Board of the Department of Health, Education and Welfare 1979, 107). The Warnock Committee chose this point because it just precedes when the primitive streak (precursor of the spinal cord and nervous system, therefore the earliest possible argument for pain perception) is formed and coincides with the end of implantation (DHSS and Warnock 1984, 66). It also marks the beginning of the embryo’s biological individuation and precedes gastrulation (at day 16). The Committee consulted widely with around 300 experts (individuals and organisations) and 695 letters and submissions from the public, but on such fundamental moral and religious questions, which have perplexed philosophers through the ages, they were unlikely please a majority (DHSS and Warnock 1984, 95-98, iv). Warnock defends the 14-day rule as invaluable and workable

(2017). She considers that it combines merits that reflect a legal concept of a distinct individual, the ethical barrier of protection against slippery slopes, the biological emergence of the embryo ‘proper’, and ease of application, as everyone can count (Warnock 2017). The Committee considered that law and its implementation requires certainty, a clear and decisive cut-off point that cannot be misinterpreted, wilfully or otherwise. Thus the rule was set ‘in order to allay public anxiety’ (DHSS and Warnock 1984, 64, §11.19) rather than any concern to protect embryos. This rule has been encoded in law on ART in at least 12 countries worldwide, and in five others it is specified in scientific guidelines²¹ (Hyun et al. 2016). In addition, it is widely affirmed by the international science community, and this ‘reflects a commitment to society to treat the limit as inviolable’ (Hurlbut in Hurlbut et al. 2017, 1030).

The Warnock Report has scathingly been called a compromise by many (Brazier 1988, 16; Elves and McGuinness 2017, 15), though given that the brief was to examine the ‘social, legal and ethical implications’ and make coherent proposals for public policy, reflecting the middle ground seems the just way to proceed (DHSS and Warnock 1984, iv-v). It has been criticised for its arbitrary selection of 14 days when there is no moral or legal significance differentiating 13-15 days, and for failing to answer the most fundamental questions, such as what an embryo is, when they become a person, or what valuable features are present at this stage (Harris 1985b, 134). Others point out that it is impossible to decide whether the embryo deserves protection without establishing why they deserve protection (Cavaliere 2017, 4). However, Giulia Cavaliere considers this very compromise to be its strength, respecting value pluralism and the differing views on embryo research that the original Committee demonstrated; its role was to maintain public trust in scientific research, and to show respect to the wide variety and strength of people’s feelings (2017, 8). She rightly considers that it is a tribute to their work that the 14-day rule has lasted so long and been followed so widely. However, the 14-day rule was not really a compromise because that would imply that both sides made concessions (Devolder 2017, 78). As it was not then technically

²¹ According to Hyun et al (2016), countries which legally restrict research to 14 days include Australia, Canada, Spain, Iceland and South Korea. The USA, China and India have similar guidelines, e.g. National Institutes of Health (1994) *Report of the Human Embryo Research Panel*.

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possible to culture embryos up to that limit, though, in practice scientists had all they needed for research at the time, and therefore made no concessions.

Even then, in 1984, there were calls to extend beyond 14 days: contemporaneous articles in *Nature* (Anon 1984) and *New Scientist* (Sattaur 1984) urged a longer time period, so that important research was not lost (Wilson 2014). Almost 40 years on, these calls have been renewed. In May 2016, a US team from Rockefeller University in USA and Professor Magdalena Zernicka-Goetz's team at the University of Cambridge simultaneously reported in *Nature* (Deglincerti et al. 2016) and *Nature Cell Biology* (Shahbazi et al. 2016) respectively that they had managed to mimic the environment and structure of the womb. This means embryos are able to grow beyond previous limits until they are deliberately stopped at 13 days in order to comply with the Human Fertilisation and Embryology Act 1990 (Gallagher 2016). Until then it had not been possible to keep an embryo alive *in vitro* beyond nine days. It has been suggested that the reason this rule has lasted so long is because until recently, it was technologically impossible to culture embryos beyond 14 days *in vitro* (Hyun et al. 2016). Both changes in technological possibilities and in public opinion have triggered a renewed call for extending the 14-day limit (Harris 2016a; Hyun et al. 2016; Connor 2016; Sample 2016; Hill 2017a). With the working methods now in the public domain, it is likely that other *in vitro* embryos may be cultivated to the legal limit. As there are many countries in the world where there are no such strictures as the 14-day rule, it is possible that embryos might even be kept alive for longer provided a simulated womb or life-supporting environment can be innovated. Silvia Camporesi holds that 'the technical feasibility view (when something is possible, somebody, somewhere will do it) will eventually prevail' (2018, 3).

In the wake of this breakthrough, public engagement began with a flurry of articles arguing the benefits of a longer timeframe (Sample 2016; Harris 2016a; Hill 2017a). Progress Educational Trust hosted a public conference in London on the subject in December 2016. The BBC broadcast a two-part radio documentary on the subject in January 2017, featuring a YouGov poll which asked 1,740 of the UK general public whether they would support a revision of the 14-day rule and, if so, what sort of revision they might support. The poll showed that 48% of those asked supported increasing the limit up to 28 days, 19% wanted to keep the present limit of 14 days and 10% wanted

a total ban on embryo research (Hill 2017b). 23% of those questioned said they did not know, suggesting some may need more information to reach an informed opinion (Hill 2017b). Progress Educational Trust have also lobbied the Science and Technology Committee of the House of Commons for an inquiry that could form the initial basis for a public consultation exercise by the HFEA, along the lines of the consultations to discuss the mitochondrial donation issue before the law changed (Starr 2017). However, there are several ethical issues about extending the research deadline that raise public concern.

6.2.2 Ethical issues raised

In this section I will introduce three arguments that dominate the discourse in this area, before presenting the MMS view in the section following. The first two are in favour of extending the rule and the period that embryos can be kept alive for research. The first claim is that it will bring future benefits (Harris 2016a). The second is that as it is now technically feasible, it should be done (Connor 2016). The third argument is prohibitive, and a theme that will resonate through all three issues examined in this chapter. This is the “slippery slope” argument, that if this change is permitted, other changes will follow and no fixed barriers will remain. The implication is that this then diminishes public trust in future scientific endeavours (Jones 2017, 70).

First, I will discuss the future benefit argument, which holds that the research period should be extended to permit future scientific advances that will benefit the majority of currently existing people. To demonstrate future benefits, its supporters point to the way that early stem cell research has contributed enormously to our understanding and treatment of a wide variety of human medical conditions, and how it launched a new field of regenerative medicine (Ludwig et al. 2018, 644). Pro-extension supporters then extrapolate potential benefits and greater goods as yet unknown (Harris 2016a; Hill 2017a). Projected benefits to the general public that *might* arise from a longer research period include insights into early pregnancy losses, congenital defects, infertility, and improving reproductive outcomes (Elves and McGuinness 2017, 16). Scientists point out that we still know little about the major structural changes in the embryo between days six-13, because *in vivo* it is difficult to access and study, and up until recently it was not possible to keep them alive

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to this stage *in vitro*. They argue this study should yield important information about the implantation process (Hurlbut et al. 2017, 1031). The week before and week after implantation have become known as the ‘black box’ of human development (Macklon et al. 2002, 334). Implantation is a milestone in human development, and also a stage at which many birth defects are acquired. The embryo must implant by the seventh day of development (Shahbazi et al. 2016, 700). Major remodelling then occurs that is required for gastrulation, successful body formation and a positive pregnancy outcome (Shahbazi et al. 2016, 706). *In vitro* modelling has revealed ‘a remarkable self-organizing capacity of human blastocysts that has been previously unknown’ (Shahbazi et al. 2016, 706).

Being able to study the process of gastrulation (which occurs at day 16) - the massive reorganisation from a single layer into three layers when the first tissues specialise and organs form - should advance our knowledge of certain types of birth defects and miscarriages, and reveal the role of genes in early embryogenesis. It could further enable study of the development of the nervous system long before the risk of pain; early development of organs; and how epigenetic programming that occurs affects later states and childhood health (Hurlbut et al. 2017, 1031). Other outcomes forecast include improving the safety and success rate of current IVF, and being better able to predict which embryos are likely to result in successful pregnancy (Hurlbut et al 2017, 1031). It would enable us to learn more about the physiology of pregnancy beyond the 14th day, including the process of implantation, and causes of spontaneous abortion. But to do this we would need to devise ways to keep embryos supported and alive in an appropriate environment, which provides another opportunity – to learn how to do this. However, Laurie Zoloth adds a note of caution by suggesting that we remember growing an embryo *in vitro* is a model only, and may not yield enough information ‘to justify the significant ethical and religious issues it raises’ (Hurlbut et al. 2017, 1031). If the potential benefits to society are sufficient, the objections may soon fade.

Some extension of the research period would not be in any danger of causing pain to the embryo itself. It is not until day 23 when the nervous and spinal systems start to form, and although reaction to touch has been noted as early as 7-8 weeks (Derbyshire 2008, 119), it is thought that sentience comes much later. Current expertise is that the very earliest point at which the human

embryo can perceive pain is around 19-20 weeks post-fertilisation (Anand et al. 1987; Grossu 2017, 1; Hurlbut et al. 2017, 1032). The longest extension being discussed is 28 days. No increase is likely in the number of embryos to be used for such research, and the criteria governing conditions under which embryo research is licensed are not likely to change (Hurlbut 2017, 1032).

Cavaliere makes a valid point that this premise of beneficence relies on misleading estimates of the costs and benefits (2017, 7). These assume that the embryo has no MS, is incapable of being harmed (for example, by the loss of its valuable future, as I argued in Chapter One, 1.5.1) and so they view the cost to the embryo as zero. She claims that the benefits are based on an over-optimistic view of scientific progress and technology, and that they do not benefit the embryo itself, but rather the wider society (that is, existing and future individuals) (Cavaliere 2017, 7). If we look at the situation from the embryo's perspective, we might ask whether it is better for an embryo to be used in research, or be left to die or be killed. The truth is that no option leads to life for leftover embryos, so it depends on which fate is more respectful: one which has a purpose that will help others, or one where potential to do some good is wasted. A possible alternative is offered by the MMS approach, as I will discuss in 6.2.3.

The second major argument that advocates for an extension to the 14-day rule is that it is now technically feasible to cultivate embryos to 14 days and beyond. To be prevented from doing so because of an outdated rule risks foregoing valuable medical benefits (Azim Surani, as quoted in Connor 2016; Harris 2016a). Presumably this is based on the utilitarian principle of what produces the greatest good for the majority, and so by extension, to be able to undertake potentially beneficial research and to be prevented from doing so is morally wrong. Furthermore, some argue that the 14-day rule must remain effective and relevant to the changes in science, or it will no longer be viewed as fit for purpose (Appleby and Bredenoord 2018, 4). There is also a danger that because the technique for maintaining embryos *in vitro* for longer is now in the public domain, it will be utilised somewhere in the world, so it is better that it is done under some regulation rather than none.

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Concluding that we should extend the rule, based on vague premises of likely beneficence and technical feasibility, does not provide a strong moral argument in Cavaliere's view. She correctly considers that this argument breaches the naturalistic fallacy, deriving an 'ought' from an 'is' (Cavaliere 2017, 6); that is, we can extend life *in vitro*, so therefore we should. It is fallacious to infer a normative judgment from a set of factual claims, so just because it is technically feasible for embryos to survive *in vitro* for 13+ days, this does not mean that we should extend the legal period during which they can be experimented on. Normative conclusions should be inferred from both factual and normative premises (Cavaliere 2017, 6). The fact is that we do not know that research *will* be beneficial (in terms of therapeutic application, though developmental embryology and knowledge will almost certainly benefit), we are extrapolating from benefits already gained. And just because we can do something does not entail that we should, as the quotation in the chapter heading makes clear (DHSS and Warnock 1984, 2).

It seems ironic that just as the 14-day rule may become useful in preventing incursions, there are demands for change. David Jones likens it to setting a speed limit that is faster than anyone can drive: if it fails to stop breaches, it would be a rule without any meaning (2017, 69). This leads to a fear that policymakers may 'redefine boundaries expediently when the limits become inconvenient for science' (Hyun et al. 2016, 171), which brings us to the third argument: the slippery slope and potential damage to public trust. If a limit is amended once, it is no longer a fixed barrier, because it is likely to move again. As the introduction to the Nuffield Council report on this subject makes clear, the benefits 'have not been clearly articulated' and 'public confidence in its governance depends on the 14-day rule operating as a real constraint and, if there is to be change, then the scientific case will need to be compelling' (Montgomery 2017, 7 & 8). However, it is difficult to envisage how the scientific case could become 'compelling' in advance of being able to carry out the research, unless 3-D modelling opens new doors. Importantly, the public needs to be convinced that moving the 14-day limit is not a descent down the slippery slope, a time limit that can be moved whenever scientists make the call (Devolder 2017; Warnock 2017; Cavaliere 2017). It has been noted that in the current climate the public do not trust experts, whether they be scientists or policy-makers. Warnock spoke of '[t]he suspicion that scientists will go to any lengths

to increase knowledge, regardless of morality or social good, goes very deep' (Warnock 2017), though she more recently noted that there is 'marginally greater trust' now than in the 1980s thanks to good scientific communicators (Warnock in Hurlbut et al. 2017, 1041). Warnock argues that the only answer to slippery slope arguments has been to produce firm legal barriers, of which the 14-day rule is one (Warnock 2017). One predicted danger of re-opening the debate about the 14-day rule is that a new limit may become more restrictive rather than less (Warnock 2017). This happened with the Abortion Act 1967 when the time limit under s.1(1)(a) was reduced from 28 weeks to 24 in 1990. Sarah Chan is sceptical of this possibility, believing in the importance of public participation in any new discourse (2017, 6).

The opposition to extending the research period would point to the previous removal of other barriers placed by the Human Fertilisation and Embryology Act 1990, such as the prevention of genetic engineering (schedule 2, 1(4)), or the need for a father (s.13 3(5)), both of which have now been changed. However, challenging what has become 'a key pillar of the regulatory regime in the UK... an example of particularly effective and trustworthy governance' threatens to overturn society's belief in the commitment of science to accept limits to their work in areas of widely-shared ethical concerns (Hurlbut in Hurlbut et al. 2017, 1035). There are also concerns that we cannot understand the long-term consequences of research in this area yet (Elves and McGuinness 2017, 21).

However, in my view, rule-making operates within a context. Societal rules and norms can change over time, as views on slavery and gay marriage have demonstrated. Equally, technological advances inevitably alter the context in which the appropriateness of the rules are judged. To ignore technological advances because of a judgment made 40 years ago is irrational. MMS provides a flexible framework where a contemporary, relevant and balanced set of criteria can be applied to specific situations. The debate is not about whether rules in society should evolve, but about how that should happen and the framework that should be applied to that decision-making.

Pressing for an extension, there is strong contention that change would be permissible because the 14-day rule is not based on a moral truth, but is a tool designed to strike a balance between enabling research and maintaining public trust by accommodating diverse moral concerns

6. PRACTICAL APPLICATIONS OF MMS

(Hyun et al. 2016, 170; Chan 2017, 5; Pera in Hurlbut et al. 2017, 1033; Appleby and Bredenoord 2018, 1). As circumstances change, the rule can be recalibrated, so long as the balance of the two goals can be maintained. However, some consider that ‘if such a careful compromise is changed, and changed because scientists want it to and not because of change in the moral argumentation, questions will arise as to whether researchers can keep their promises to society’ (Zoloth in Hurlbut et al. 2017, 1036). Others contend that the 14-day rule must remain fit for purpose to be effective and relevant (Appleby and Bredenoord 2018, 4). Chan does not think that the limit was intended to be permanent, and that we should be responsive to new ‘scientific and social dimensions’ (2017, 6). As science is changing, regulations need to adapt. It has been argued that this is one rule that works widely, but if it is not revised, we will lose one of its better examples of governance; to fail to revise it may send a damaging message to innovators and those who stand to benefit (Appleby & Bredenoord 2018, 4). The onus is on us to provide a new framework for better regulation of newer techniques such as mitochondrial replacement techniques or gene editing techniques for embryos, but it must promote inclusivity and trust through public consultation. MMS can help play a key role in this.

The role of public opinion and the importance of public trust are crucial in enabling and controlling scientific progress, as has been demonstrated by the public objections to the widespread introduction to genetically modified crops, where public approval was not sought first (Motta 2014). Without trust in the experts, public compliance is difficult to achieve, but with it, Cavaliere et al. hold that ‘when legitimacy obtains, people are more inclined to conform to the policies and to avoid forgoing the potential benefits the technology in question may bring about’ (2019, 81). There needs to be close collaboration between the work of local research-oversight committees and statutory bodies (such as the HFEA) to prevent a public backlash and more restrictive rules (Hyun et al. 2016, 171). Some consider that the most important stakeholders in this debate are potential patients, embryo donors, healthcare providers and researchers in this area, because they are involved - all others are merely third parties (Murdoch in Hurlbut et al. 2017, 1036). However, Murdoch also acknowledges the importance of public engagement techniques such as those used in the mitochondrial replacement debate, where the voice of patients was deliberately dominant.

The HFEA engaged members of the public by gathering both quantitative and qualitative views (HFEA 2013).

Cavaliere argues that ‘...even if the question of the moral status of the embryos cannot be easily settled, there are two arguments in favour of reaching a compromise and respecting value pluralism... trust and... respect’ (2017, 8). The trust argument holds that scientific research is important because it improves people’s lives, so it should be allowed to progress. Cavaliere’s second premise and conclusion (that public trust in scientific research is necessary, and therefore should be preserved) raises two questions for me: whether it is true that public trust is necessary for scientific research to continue, and what the role of the public should be in policy making (Cavaliere 2017, 9). Onora O’Neill argues that trust is the basis for human rights and democracy (2002), but she thinks trust has been undermined. In a democracy public servants are accountable to the public, or they will not be voted back into office, but scientists are not generally publicly accountable. In O’Neill’s view public opinion should influence what scientific research is permitted, because of the fundamental importance of public trust in society (2002). If the public are not involved in consultations, and there is no accountability other than that which scientists impose upon themselves, fears of scientists creating Frankenstein’s monster, or “playing God” will abound. There must be trust and a variety of sources for accountability, the ability to ask further questions, and draw on the expertise of individuals from a variety of backgrounds, thus we need public consultation (O’Neill 2002). It is an essential part of democratic life. Scientists must not dismiss the public as ill-informed when it has a legitimate and genuine disagreement (O’Neill 2002). Securing public trust is particularly important because science-based policy-making has grown in importance – science and technology interact with society and economy at local, national and global levels (Arimoto and Sato 2012, 1176). Trust is vital in a virtue ethics framework, to enable the public to feel secure that the scientists are honestly and reliably working for the benefit of all, and not for their own ends, which in turn results in public cooperation. Society needs to have broad perspectives and balance from all stakeholders, taking into account the diverse policy fields involved in forming complex scientific problems (Arimoto and Sato 2012, 1177).

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As one commentator puts it, the public are stakeholders and ought to be empowered: ‘[o]utside involvement is not only necessary but critical to challenging of current boundaries to bring about suitable and acceptable reform’ (Davis 2019a, 140). Public trust is born from transparency. If the public can see that an objective and rational set of criteria are being applied to a decision, they may be more likely to support it. MMS can help to set the agenda through its various dimensions and levels for MS. These provide a transparent way that can be applied in decision-making.

As a counter-balance to public trust, recent experiences with “Brexit” in the UK provide a cautionary note. In this, public debate was less rational, and more emotional in a social media hothouse where ‘alternative facts’ thrived and experts were not trusted (Joyce 2017). Whether public trust in experts will increase or decrease after the 2020 Covid-19 health crisis, when lives are at stake and the experts are medical advisors, remains to be seen. Having a rational basis for public debate such as MMS is no longer sufficient: more critical is the background against which that debate takes place, and whether public trust pertains.

6.2.3 The difference MMS brings to a possible extension

The difference the MMS view brings to the possible extension of the 14-day rule will depend on exactly what changes are mooted, and on what basis. This discussion will assume that the time extension is the only change to the research conditions (so that the criteria for research remain as set in the Human Fertilisation and Embryology Act 1990 and its 2008 amendment, with the same eight principal purposes for activity), and that the Proportionality and Subsidiarity principles are adhered to, which ensure that the research is addressing an important medical question that cannot be answered using any substitute. Scott Gelfand suggests that under a Hypothetical-Agent-Based Virtue Ethics account, a criterion of act evaluation is that an act is right if and only if it is the type of act that a virtuous agent might perform (2006, 94). In order to decide which motives are grounded in justice and compassion, the two virtues that are most pertinent to the area of early MS, the key question is whether the MS of the embryo is significant enough to forego the benefits that may come from the time extension. As a reminder, before 14 days, the embryo is not individuated

and they are inseparable from the cells that will be discarded at birth, the placenta and so on. They are alive, and have a function as research subjects that give them a minimal MS. They are not objects that we can choose to do what we like with. Apart from the legal restrictions, there are moral restrictions on how they ought to be treated, as outlined in Chapter Four (4.2.1). These are embryos surplus to reproductive requirements (assuming that these are ‘spare’ embryo donated, and not created specifically for research using methods such as SCNT or iPSC²²). The fact that they are destined through their progenitors’ choice to donate them to research means that their person potential will not now be actualised, therefore their function is as research subjects, but it would be unjust to treat such entities as objects.

Post-implantation, a reproductive embryo’s potential normally increases in recognition of the fact that successful implantation is congruent with pregnancy and the aim of live birth. Given that the natural loss level decreases after successful implantation, the level of potential increases from being a mere possibility to a better chance of survival post 14-days. However, in this case their only potential is for research, so their MS remains minimal. There are no extrinsic considerations that will add to the embryo’s MS due to their intended function. Their genetic potential to become a person has been removed by circumstance. We should also bear in mind that surplus embryos donated for research may be poorer quality and have less potential to successfully reproduce anyway (Ehrich et al. 2010, 2207). Their progenitors have donated the embryo to research because they are superfluous to their reproductive requirements. Research embryos are no longer potential human beings, but they are still valuable entities due to their reprogrammable stem cells. They are not morally on a par with other human tissue, which has no MS, because of the special possibilities within their cells to reproduce, though they have less MS than an equivalent embryo destined for use in reproduction. They have a minimal MS that obliges a compassionate moral agent to put restrictions on their use that reflect human dignity; as a living (though very early) phase of development in the human species, there are many uses to which they should not be put, and these limitations may be appropriately seen as a way of expressing regret for the loss

²² See glossary

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of their future life. They should not be used in experiments unless the aim is scientifically important and likely to be of benefit to medical research, nor should they be used if they could be replaced by something less morally valuable and the aim of the experiment remains feasible: the principles of Proportionality and Subsidiarity. A major element is the motive of those engaged in research: if it is the development of new therapies to heal many people it is morally important because that is a just aim (Buxton 2017). Then, careful and respectable research is justified. The obligations due to embryos are to ensure that their research potential is not wasted. We cannot justify the suffering of millions to save embryos not required by their progenitors.

There is a dichotomy between reproductive and research embryos, as has been previously observed (Harman 2007; Kingma 2017, McGuinness 2012). The intrinsic MS does not differ, but their extrinsic valuations diverge. Their interests vary with their life opportunities, life form and life stage, and post-implantation, their chances of life increase according to the pregnancy loss iceberg²³ in reproduction (Larsen et al. 2013), which I have argued gives reproductive embryos slightly more MS compared to research embryos. Kingma considers it possible that the embryo's MS increases with developments, but also argues that this does not mean that the more developed embryo should be given that much consideration, as this is likely to depend on the level of development (2017, 76). Pain cannot be felt at either 14 or 28 days, an embryo post-individuation cannot make plans, have desires or see themselves as part of a community, so extending their life cycle would not cause a change to their MS or damage their interests any further than the 14-day embryo. Although on the MMS model life and genetic potential have increased a level after 14 days, this is on the assumption that an embryo has implanted and will be reproductive, which is not the case if their function is research. So on the face of it, an extension of the 14-day rule to 28 days would not make a moral difference to the embryo themselves.

If the benefits of extending the 14-day rule can be crystallised into a clear rationale that is likely to medically benefit current persons, our compassion-based ethical motivation for permitting extension will override the moral considerations for embryos that through extrinsic circumstances

²³ See Appendix 1 on pre-natal loss

has lost their reproductive purpose. Despite their minimal MS, they cannot be harmed further by pain, and their valuable reproductive future has already been lost. However, before there is any extension there needs to be a strong likelihood that ‘very important research or therapeutic goals can only be achieved through [extending the time]’ (Devolder 2017, 79). Scientists would need to explain the additional benefits and likelihood of studying 14-plus days, given that studying days 7-14 has only recently been made possible. Devolder considers that there needs to be a plausible story marking some development, similar to the primitive streak marking individuation, to gain public acceptance, but part of the problem is that there is no such developmental marker (2017, 79). The next possible development after gastrulation is the heartbeat around six weeks, but this is developmental rather than denoting a moral differentiation. The alternative, a set number of days, has the benefit of being easily monitored, at least. Others call for a careful evaluation of likely benefits, an extensive inquiry into public attitudes, and a deliberating process that is in the public domain (not the closed doors approach of The Warnock Committee) (Cavaliere 2017, 10). Cavaliere calls for ‘a truly deliberative and democratic debate on this issue. All in all, greater technical potential translates into greater responsibilities and the need for deliberation’ (2017, 10). What is important to the MMS view, given its virtue ethics basis, is what the practical wisdom is in the circumstances, informed by the pertinent virtues. An extension is not likely to change the compassion felt towards the embryo, nor does it change the inherent lack of justice that certain embryos are selected for reproduction and all the goods that life has to offer, and others are destroyed, either sooner or in the case of research or frozen embryos, later. The counter-balance to this is that justice is served by allowing embryos to perform a useful research function and live a longer life before destruction. Under MMS, we ought at least to regret their eventual destruction. Though the course of action is correct, there may still be regret for the undesirable effects of the action on those involved, and a moral agent trying to follow a virtuous course of action should express this (Gardiner 2003, 299-300).

The question of whether or not change is technically feasible does not justify extending the 14-day rule. Whether or not it is factually possible to keep the embryo alive longer has no bearing on whether or not it is morally the correct course of action to extend the research limit. If it became

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technically feasible to resurrect someone after they have died, it would not automatically be morally right to do so. Guided by the actions of a moral agent motivated by the virtues of compassion and justice, we would look at whether the person wants to live again – whether they still have plans for their life that they long to carry out, if they have loving relationships connecting them to life, or whether they were suffering physically or mentally before death occurred. We would want to consider what caused their death. There might be a stronger moral reason to perform post-death resuscitation to a mother of five who was killed as a result of a road accident than someone who had lived a long life, was ready to die and succumbed due to natural causes. Given limited resources, however, distributive justice would mandate a need to consider equipment, staff and costs, and weigh these against the outcomes in terms of quality of life saved. Similarly, if the embryo was intended to live, then we would have moral cause to extend this life as long as it is possible. Given that the embryo is being kept alive not for their own sake, but for epistemological reasons (to educate the next generation in reproductive development) or to aid others, the question is at what stage this becomes a moral wrong, even malevolent. Research embryos have a minimal MS, which limits the uses to which they can be put (as I have argued in Chapter Three, 3.6.1), but permits their killing when it is of use to those with higher MS, so long as this complies with the principles of proportionality and subsidiarity. If the time period is extended, our obligation is to ensure that such research is absolutely necessary and important enough to justify the slightly higher level of life that the embryo has at 28 days or more. Where there are benefits to be gained through research or clinical use, MMS does not prohibit an extension.

Robin Lovell-Badge outlines a two-tier research licence (in Hurlbut et al. 2017, 1032). Rather than creating a blanket extension to 21 days or 28 days, which may not be necessary for every research project, in order to aid public trust he considers it might be preferable to minimise the amount of embryos kept alive for the longer time period. Most research periods would be for 14 days but an extension to the agreed new limit could be reviewed on a case-by-case basis, with increasingly stringent justification required for the longer period requested. If this serves to increase public trust, a virtuous moral agent would support such a system.

On the question of whether extending this limit would inevitably further erode public trust in firm limits, becoming a slippery slope leading to the ultimate fear of nine months' laboratory gestation (Warnock in Hurlbut et al. 2017, 1041), the MMS view above should balance the public's concern with permitting advances in medicine that there is a proven need for. Let us look at three different stages: first, when embryos are 28 days old; second, late embryos at eight weeks, and finally, fetuses of seventeen weeks, and consider the obligations due to MMS at those stages. Given that these are research embryos, and surplus to their progenitors' reproductive aims, the criteria relevant to the MMS of 28-day old embryos are life - which has moved up to level two, having survived the critical period during which many birth defects occur - and their function as research embryos. Their hearts will be beating, and the earliest brain and spine developments are in place (Curran 2019). By eight weeks, their level of life has increased again, they have a face and limbs and are becoming fetuses. At seventeen weeks not only are there further increases in life (they move independently – quickening), they have most of the recognisable human characteristics. They are close to sentience (19-20 weeks) and viability (from 22 weeks), and by this stage our obligation ought to be to do everything possible to sustain their lives.

We should seriously consider what part of embryo/fetal development we are concerned at drawing a line at. Human development is constant and there is no one point that stands out apart from at 14 days the roughly concurrent occurrences of individuation, implantation and development of the primitive streak, the latter denoting the earliest predecessor of the neural system. 28 days is the furthest limit currently under discussion, after which period it may be possible to obtain embryos for research from terminations instead, so this is safely within parameters before pain can be perceived, and some experts argue that this limit will not need to move again (Hurlbut et al. 2017, 1032). This may not be true if societal acceptance can be gained for another area of research, ectogenesis, which I will discuss in the following section.

6.3 MMS and ectogenesis

6.3.1 *Background and context*

Ectogenesis, or artificial womb technology (AWT), is the development of embryos/fetuses in artificial conditions outside the womb. This was the subject of several works in the 1920s following the publication of J.B.S Haldane's lecture text in 1924, *Daedalus; or, Science and the Future*, in which the term was coined, although the idea has been traced back to the sixteenth-century alchemist Paracelsus (Yuko 2012, 10, 32). Ectogenesis has also been the province of science fiction since Aldous Huxley's *Brave New World* (1932), a novel in which all births are engineered in artificial wombs to produce a government-regulated labour force based on intelligence and class. Huxley's was the kind of nightmare scenario the 14-day rule was brought in to prevent, but as new technologies emerge, scientists are predicting that an artificial womb for human use is likely to happen in the next thirty years (Steiger 2010, 144). In 1997 Dr Kuwabara and his team at Juntendo University, Tokyo successfully reared goat fetuses transplanted from their mother's womb into an artificial womb, from the equivalent of 20-24 weeks to full term, and predicted it would soon be possible for human fetuses to undergo partial ectogenesis (Gelfand 2006, 2). At Cornell, Dr Hung-Ching Liu grew a mouse embryo in a bio-engineered, extra-uterine environment almost to full term (Liu et al. 2003), and reportedly grew a human embryo for ten days in 2011, though aforementioned recent work since extended this to 13 days (Shahbazi et al. 2016; Deglincerti et al. 2016). With viability possible from 22 weeks, it is vital that ethicists, as well as doctors and lawyers, work through the moral, legal and social implications likely to result from ectogenesis (British Association of Perinatal Medicine 2019, 3). The views on whether this will be of benefit to society or the opposite are likely to be as polarised as the discussions of the Warnock Committee over hESCR (DHSS and Warnock 1984, 90). Discussions around ectogenesis since the 1970s have been wide-ranging and polemic. What some see as having the potential to bring great benefits such as freedom from the tyranny of reproduction and greater equality between genders (Firestone 2015, 179-182), others view as morally bankrupt and manipulative (CDF 1987, s.5 I (6)).

There are two types of AWT, partial and complete ectogenesis. Partial ectogenesis is where the earlier part of gestation takes part *in vivo*, and the embryo/fetus is then transferred to an artificial womb. This aims to save fetuses who would otherwise die through spontaneous or elective abortion, or very premature birth. Work is currently being done to enable prototypes of artificial wombs for premature infants, for example, at Eindhoven University of Technology (Davis 2019b). Partial ectogenesis affects the latter stages of human development and neo-natal care. As this offers a medical solution to current problems of extreme premature births, it is less ethically controversial than the possibility of gestation from conception to ‘birth’ entirely outside a woman’s uterus. More controversially, partial ectogenesis might offer a middle way in the abortion debate, for example, permitting a woman to terminate her pregnancy without killing the fetus by undergoing a fetus retrieval procedure, with the fetus continuing to term in an artificial womb, enabling a woman to retain her bodily autonomy without killing the fetus. The possibility of terminating pregnancy without ending the life of the fetus is seen by many as a more moral solution to a social problem (Singer and Wells 1984, 135). It is a view Thomson seems to support when she notes that it would not be permissible to disengage from her unconscious violinist, then slit his throat (1999, 45); while a woman has a right to stop pregnancy even if this kills the fetus, their death ought not to be deliberately incurred. Thomson, however, acknowledges the psychological difficulties that may arise for a woman from knowing that her child exists (1999, 45). Whether abortion fulfils a desire only to stop being pregnant, or not to bring a child into existence is a moot point. A small qualitative psychological study on attitudes to ectogenesis from both pro- and anti-abortion lobbies suggests that both sides reject ectogenesis as an ethical solution to unwanted pregnancy (Cannold 1995, 61), though for different reasons. Pro-life supporters consider that a good mother should put her future child’s needs above her own and reject ectogenesis. Pro-choice supporters view childbearing as a choice that comes with responsibilities, and that whereas abortion ends those responsibilities, ectogenesis does not, and as they cannot control how the future child will be treated, the fear is that this is an inhumane option (Cannold 1995, 59). This would also raise the same issues of distributive justice discussed in Chapter Five.

Complete ectogenesis is still a long way from becoming a technological possibility, let alone the subject of legislative controls, but I will concentrate on this area because it is most relevant to pre-sentient human life. Complete ectogenesis may be seen as a solution offering access to genetically related offspring for those who are unable to gestate or give birth naturally, including same sex couples (Singer and Wells 1984, 133; Cavaliere 2020, 77). The removal for women of health risks associated with pregnancy and childbirth has been heralded by some as a leap forward, with others considering that the removal of the need to gestate in order to have children would promote equality with men by removing a major cause of career inequality (Smajdor 2007, 338; Firestone 2015, 213). However, some caution that this may give employers a reason to pressurise women into choosing ectogenesis over natural methods to minimise missed work hours, reinforcing ‘the entrenched system of exploitation’ (Gelfand 2006, 99). It is likely to be a process that is accessed not by those who need it most, women who are poor, disabled or from ethnic minorities who are likely to experience greater risks through complex pregnancy and childbirth issues, but by those who can afford it and culturally have better access to it (Cavaliere 2020, 78). It has been suggested that complete ectogenesis would present a way to enable spare embryos to be given a chance of life (Reiber 2010, 524), though this would raise various ethical questions to be discussed in the next section.

6.3.2 Ethical issues raised

One ethicist has listed 17 valuable goals and 23 ethical problems arising in the literature about ectogenesis (Yuko 2012, 40 & 47), which gives some idea of the breadth and variety of issues raised. In this section, I will concentrate on two areas particularly pertinent to the MS of the embryo: the welfare of the completely ectogenetic fetus, and permitting embryos/fetuses to be custom-grown to provide organs for transplant.

Complete ectogenesis holds promise of a solution to three possible problems: enabling those who are unable for various reasons to conceive and maintain pregnancy to term and who do not wish to use a surrogate; enabling women who do not wish to continue with a pregnancy to stop without killing the embryo/fetus (should there be any women in this position); and to enable spare

embryos to have a chance of life. With all three cases, there is serious risk to the welfare of the embryo/fetus.

Given that little is known about the realities of complete ectogenesis, this discussion is necessarily based on certain assumptions, not least that it is somehow possible to progress to therapeutic use without risking the valuable futures of countless embryos/fetuses through human testing stages of any new therapy. Initially, getting to the point where a pregnancy can successfully be maintained ectogenetically, it would seem inevitable that many embryos and fetuses will die in trials. It could be argued that all medical progress involves risk, the first organ transplant patients took risks, although in contrast with embryos, they were competent to give informed consent (Murray 2004, 77-79). The recipient's alternative was likely to be an early death, though, and not only can embryos/fetuses not give any form of consent, they also have considerable potential for life. It will be particularly difficult to justify the sacrifice of sentient fetuses in trials, unless the gap between sentience and viability can be bridged first, so that partial ectogenesis is successfully developed to enable life support from 18 weeks or so, before complete ectogenesis is attempted.

On the positive side, it might be possible that the safe, controlled medical environment could offer an improvement on 'natural' conditions for some fetuses that will be beneficial. This might be because they will have optimal nutrition and environmental factors, and will not be subjected to the vicissitudes of human priorities. There will be no maternally coerced intake of spicy or unhealthy foodstuffs, alcohol or drugs, nor harmful effects from sudden changes in speed and adrenalin spikes as the woman pursues her favourite hobbies. Fetal abnormalities might be able to be tracked much earlier and possibly treated before they became life-threatening. Fetal wellbeing might be benefited by the scientists being able to observe and treat conditions without intruding on another's body to do so. These suggest that ectogenesis might enhance fetal wellbeing.

However, the absence of the maternal-fetal contact is likely to be a hurdle to overcome, and potentially affects both the physical and psychological welfare of the embryo/fetus. Whether sensory deprivation before birth – even before sentience – might have long-term effects on fetal social, physical and psychological wellbeing, becomes an enormous question. The psychological harm that is done to an infant denied physical touch in the early weeks of their life is well-

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documented (Hertenstein 2002; Császár-Nagy and Bókkon, 2018; Cascio et al. 2018; Mercuri et al. 2019). This would need to be closely monitored as ectogenesis research progresses, though how ethical research into this subject could be carried out without risk of serious and long-lasting harm to a future person is hard to envision. Even Singer and Wells note that we currently lack knowledge about the conditions needed to nurture a developing human outside the womb, and it would be a reckless form of human experimentation with potential long-term effects (1984, 140). There are also questions about how to ensure that maternal-fetal bonding is activated, and how it is compensated for in any cases where there are no parents (where ectogenesis might be used because the mother was dead or dying, for spare embryos, or the abortion-without-killing option). Questions would arise about what happens to the fetus that develops abnormally, or if either progenitor changes their mind after initiating the process (Steiger 2010, 155; Yuko 2012, 53). Another question raised is whether progenitors should have the same right to decide whether to terminate embryonic life as a woman has over abortion currently, and if so, perhaps that would become a more equal decision for both parties, given that the female right to bodily integrity has been removed from the equation. If both parties did not agree, some system for settling disputes would need to be provided. Legislation would be needed to decide on what kind of disability would justify life termination when there is no risk to maternal safety, which would be a difficult ruling given that almost any chance of life would seem preferable to none at all. Termination cannot be provided on the basis of disability after birth, and we cannot legally prevent suffering through euthanasia, other than by withdrawing treatment (Wee 2019).

Another element to weigh in the balance in the long-term wellbeing of a child born through ectogenesis is the effect of this method on future life, even if all was physically normal. Any differences in life can be exploited and render children subject to bullying or intrusively close observation in the public eye. Elizabeth Romanis (2019) argues that the subject of partial ectogenesis would be a ‘gestateling’ not a fetus, which seems to me to dehumanise them by separating them from their natural development stages merely on the basis of their location. She claims that a gestateling is ‘a unique human entity, functionally distinct from the fetus and newborn’ (Romanis 2019, 1), and raises the possibility that gestatelings and newborns have a

different MS. Many consider this to be true of the fetus and newborn too, although under MMS there is little difference between the late fetus and the newborn. This may be a misleading argument, though. The same argument could have been used about Louise Brown and the early IVF offspring, but IVF births are now normalised and children are not discriminated against on this basis.

Another welfare issue for the future child ‘rescued’ from abortion or a fate as a spare embryo is who would pay for the process. Ectogenesis is likely to be an expensive process in itself, then there is the additional burden of costs to raise the post-natal infant, particularly given that many of the spare embryos would have been deselected originally because they were not good quality and seem unlikely to survive. There is also the issue of who would take on the burden of child-rearing if they survive, or if they are born with the additional demands of special needs. Some consider that this prospect would present an enormous burden on society both financially and socially, raising the question of who will take on the responsibility for rearing the children *in loco parentis*, individuals or the state (Yuko 2012, 133). This is an issue for distributive justice when there are scant resources, where the virtue of justice demands consideration of the needs of all involved. The psychological welfare of the future child is crucial, for they are likely to want to know of their origins, and to be designated a ‘spare’ would create a very negative effect. It might create second-class offspring, and a dehumanisation that is reminiscent of Huxley (1932), and as its opponents suggest, ‘could also lead to the perception that children are the result of a sort of manufacturing process’ (Reiber 2010, 527). If in addition they were made to feel a burden to society, to be reared in children’s homes, the virtue of compassion is lacking, and this is unlikely to lead to positive wellbeing or flourishing.

The question of whether it is morally acceptable to create and gestate embryos/fetuses to a particular stage ectogenetically in order to yield organs for use in transplant surgery for neonates or, presumably, for fetuses that are not developing healthily, provides a more controversial ethical dilemma. There is a definite medical need for tiny organs, as established by the case mentioned earlier in 4.4.5, *In re TACP* (1992), where the family wanted to donate the organs of their anencephalic child for this purpose. The conceptionist view would consider that the embryo/fetus

is worthy of life protection, so such usage is immoral in Reiber's view (2010, 527). Singer and Wells's utilitarian view considers that this would be a valuable use of the technology, with the benefits that the embryos grown could be made to order to be a genetic match to the recipient, thus minimising rejection rates (1984, 147). By stopping the donor fetus's development before the brain and nervous system develop, pre-sentience, they consider that this does not breach their MS because it is equivalent to the permissibility of transplants where brain death has occurred. Let us now consider how the MMS view would approach these two issues.

6.3.3 The difference MMS brings to the ectogenesis debate

A major difference between this discussion and the previous discussion on extending the 14-day rule is that ectogenesis involves research on a reproductive embryo. Not only is the embryo living and functional in a research capacity, which grounds a minimal MMS, they have the genetic potential to become a person and this is the aim of the scientists, grounding a second function as a reproductive embryo. If one or more of their progenitors is able to be involved in seeing them develop, it may result in a strong relationship forming even earlier than in viviparous pregnancy, counterbalancing the loss of physical sensation for the female. These elements strengthen their MMS in comparison to the research embryo even before individuation, because extrinsic circumstances mean that they have potential to become a person.

To return to Gelfand's Hypothetical-Agent-Based Virtue Ethics account (2006, 94), would a virtuous agent utilise ectogenesis in either the embryo's best interests in their future wellbeing, or to enable other fetuses or newborn infants to benefit from utilisation for organ growth? Gelfand suggests we need a model analogous to loving parents making choices for their young children. Under an MMS approach, ectogenesis is not automatically rejected, as it is by Catholic teachings, for example (CDF 1987, n.6). However, nor does it hold that the embryo has zero MS. The concern should be what is in the best interests of the embryo/fetus. In most cases, despite the controllability of an ectogenetic environment, it seems more likely that *in vivo* gestation will be the optimal choice for gestation as a move to ectogenesis would take a sea change in public opinion. This suggests that ectogenesis should only be used where natural pregnancy is not a possibility under an MMS

approach. In turn, it ought not to be used to favour the interests of women for gender equality, as Shulamith Firestone (2015) and Anna Smajdor (2007) argue. This is not to denigrate the importance of this aim, or to suggest that the MMS of a reproductive embryo is anywhere close to being equal to that of a person with FMS, but it is not negligible either. Even if ectogenesis were to produce the desired move towards greater equality - which I concur with Cavaliere (2020, 78) in doubting, not least because pregnancy represents only a small part of childcare inequalities - I suspect that even if access was open to all, few would use it out of choice. Let us assume that future ectogenesis regulations would permit its use only in the best interests of future children, to enable them to come into existence where they might not otherwise be able to, or to avoid exacerbating serious medical conditions in the gestating woman, for example, rather than to enable her to avoid the normal discomforts concomitant with pregnancy. In such cases, where the aim is to gestate the embryo/fetus to a time period equating with birth, then provided this could be done without damage to the long-term physical or psychological welfare of the future child, as outlined in the previous section, then a virtuous moral agent acting with compassion towards the embryo/fetus, would have no objection. Such a procedure ought to comply with the theories of distributive justice, to ensure fair distribution of this resource based on need, not geography or socioeconomic status (Wright 2009). As Cavaliere points out, with resource allocation and prioritisation, it is unlikely that ectogenesis would be freely accessed by all, and may even end up creating a new inequality (2020, 79).

With regard to organ ‘farming’, however, under MMS the ectogenetic embryo has a minimal MMS from syngamy: if in addition to being alive, they have a function in research, then the obligation due to this is to ensure that any use in research must comply with the Subsidiarity and Proportionality Principles. As a reminder, the Subsidiarity Principle states that no other substitute or less controversial alternative could be used, which would be applicable here (Devolder 2005b, 172). With the Proportionality Principle, the need for small organs to enable the survival of newborn or premature infants or late fetuses means that producing replacement organs is an important purpose, enabling a major health interest (Devolder 2005b, 172). However, the potential

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benefits of this medical intervention may not sufficiently outweigh the harms of the destruction of the ectogenetic embryos/fetuses, dependent on what stage the organs could be harvested.

The heart is the first organ to form at around 18-19 days, beginning to beat at 21-22 days (OpenStax 2016, 129). All major organs are fully formed by 12 weeks (Curran 2019). It seems likely that researchers would wish to harvest organs well before the ectogenetic fetus becomes sentient at earliest 19/20 weeks, in order to avoid accusations of cruelty. Applying MMS, the virtuous moral agent would have to weigh up the right course of action in order to be compassionate and just to the embryo. Under current regulations, any embryo beyond 14 days would have a reproductive function, and once the pregnancy is known about, their progenitors may be developing a relationship with them. Presumably the embryo would have the genetic potential to become a person, unless it becomes feasible to engineer the embryo/fetus not to be able to develop beyond a certain point, or by selecting for anencephaly (which results in death at or soon after birth), in order to remove this potential.

To grow embryos/fetuses purely to harvest their organs for the use of others does seem to fall into the category of 'growing human beings for spare parts' (Bush 2001), and there is an instinctive revulsion at this. This may be based on an intuitive compassion that "one of us" is being utilised, or because the donation of organs should be seen as a gift, not part of a manufacturing process. Its proponents might argue that abortion is possible up to this point, so there is no moral difference between killing an ectogenetic fetus at 18 weeks and killing an unwanted fetus at the same time. The latter is legal, so why should the former not be, particularly given that unlike the latter, this procedure would be of important medical benefit for a third party, the organ recipient. However, legally, abortion is only possible due to medical risk to the woman as discussed in 5.6.3, and the aim is to protect the woman, not destroy the fetus. The difference is that the terminated fetus is demanding a great deal of the health of the gestating mother, and if the terms of the Abortion Act 1967, s.1(1)(a) have been correctly adhered to, this should involve risk, greater than if the pregnancy were terminated, of injury to the physical or mental health of the pregnant woman.

The difference between this and saviour siblings - those children deliberately conceived through selective PGD at least in part (though importantly not solely) as a potential source of donor

organs or cells for an unwell older sibling - is that the saviour sibling is able to experience all the goods of life, and this has become ethically acceptable (Sheldon and Wilkinson 2004). Creating an embryo for a similar purpose, then denying them their inherent potential to be born seems less justifiable, using them solely as a means, rather than also as an end in themselves. While I argued against the relevance of means/end arguments in Chapter Two (2.2.3), once the embryo is individuated and their heart begins to beat, and as they begin to move independently, the range of life is increasing. The older the fetus becomes, the more likely they are to actualise their potential. By around 22 weeks in the UK doctors should attempt to save the life of the premature baby as they may be viable (though 70% are likely to die) (British Association of Perinatal Medicine 2019). By this point ectogenesis for organ donation should definitely not be permitted on two grounds: cruelty, because they are likely to be sentient; and because there is a chance that they would survive if their organs were not harvested, making the transplants tantamount to infanticide. This presumes that all the organs would be taken and death is inevitable. If a kidney were to be removed, then the ectogenetic gestation continued to term, it may be more akin to the saviour sibling scenario. While MMS does not pinpoint clearly when ectogenetic pregnancy for organ harvesting becomes a moral wrong, it would permit further investigation through careful and principled research than other theories that ascribe MS to the early embryo.

6.4 MMS and heritable genome editing

6.4.1 Background and context

Germline gene editing (GGE) is a form of genetic engineering that involves ‘the deliberate alteration of a selected DNA sequence in a living cell’ (Nuffield Council on Bioethics (Nuffield) 2018, 174), affecting cells that are inherited by each subsequent generation. Such techniques were used to modify human embryonic DNA in April 2015 with the aim of reversing the mutations leading to muscular dystrophy using CRISPR Cas-9 (Liang et al. 2015, 363). This study used embryos that had an extra set of chromosomes, meaning that they would not have survived

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pregnancy, and there would be no long-term ill effects if something went wrong (Gyngell et al. 2017, 505).

The techniques using engineered enzymes have revolutionised genetic engineering because of the efficiency and precision of targeting the DNA strand and its ease of use. Previous, cruder techniques have been used on animals for 20 years, causing serious side effects in most (Gyngell et al. 2017, 498). The granting of a licence in the UK by the HFEA to the Francis Crick Institute in January 2016 to use genome editing technique CRISPR/Cas-9 on human embryos added to the building pressure from the science community to change the 14-day rule (Francis Crick Institute 2016). The potential use of human GGE for therapeutic purposes will directly benefit the future person that the embryo will become, so in one sense it is less controversial than work done with research embryos that benefits society, and arguably harms its subject. On the other hand, because its results are heritable, it is not just the edited embryo that will be affected, but all its progeny for future generations.

The first apparent case using this editing technique on humans resulting in live birth was led by He Jiankui and resulted in twins, Lulu and Nana, born in China - news which broke in November 2018 (Verdict Media 2018). He claims they were gene-edited to be resistant to HIV, but due to ethical concerns his work has not yet been published in a peer-reviewed journal. Breaking the ethical barriers caused a furore. He's unpublished papers have caused concern that he ignored ethical and scientific norms: key claims are unsubstantiated, the parents were possibly pressured into giving consent, and the medical benefits are dubious (Regalado 2019). This led to a call in *Nature* for a moratorium (five years was suggested) for clinical uses of germline editing while an international framework of conditions is established (Lander et al. 2019, 165). Then, nations can choose their own path, provided due notice is given. The moratorium does not apply to research uses of GGE, provided no embryo is implanted, or to genome editing of somatic (non-reproductive) cells to treat diseases where patients provide informed consent and it is not heritable, e.g work on beta thalassaemia and sickle cell disease (Perrin & Burgio 2019). The aim is to prevent further genetically modified children being created without a framework of control and broad societal consensus on the appropriateness of altering a fundamental aspect of humanity for a particular

purpose. The scientific community widely agree that the risk of off-target mutations is ‘still unacceptably high’ (Lander et al. 2019, 166). Long-term biological consequences are not yet sufficiently understood for individuals or the species. If a mistake is made, or there are unforeseen side effects of the editing, it cannot be reversed, and this creates a problem, not least because it seems unethical to make decisions that will affect several generations, without their consent for obvious reasons.

6.4.2 Ethical issues raised

The issues raised are many and varied, and there is little consensus even among scientists, but I will focus on two pertinent to MS, the welfare of future persons, and the permissibility of using GGE to enhance desirable characteristics rather than for any medical need.

The first issue, as with ectogenesis, is the welfare of the future person whose genes have been edited (Nuffield 2018, xvii). The question is whether there is a sufficiently compelling reason to use this procedure to justify the risks to the embryo. People with a heritable genetic condition who wish to have genetically related children unaffected by the inherited condition could use preimplantation genetic diagnosis, gamete donation or (though this does not meet the genetically related aim) adoption (Nuffield 2018, Chapter One). There are some rare conditions where screening could not be carried out, though. Selection is not the answer for all cases – 19% of women produce only one viable embryo, and if that carries the faulty gene, there is no choice to select from, and some conditions such as Huntington’s disease cannot be selected out, as every embryo is predisposed to the gene (Gyngell et al. 2017, 500). Additionally most common disorders are not the result of single gene mutations. Coronary artery disease has 35, for example, and so embryo selection would require more embryos than it is mathematically possible to produce, whereas GGE allows multiple changes on a single embryo, so could target many different genes simultaneously (Gyngell 2017, 501). Its proponents would claim that most children with severe genetic diseases are born to couples who did not know they were at risk (Lander 2019, 167).

Another question regarding the welfare of the future child is whether such a procedure would be safe and effective. The technique is still in development and nothing can be known about long-

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term health effects. The fear is that ‘off-target mutations’, where trying to edit one gene can sometimes result in unintended changes to others, may result in cancer, disease or disability (Gyngell et al. 2017, 504). There may be possible future harmful effects of gene editing on the human species (and these cannot be removed from the gene pool unless all carriers agree to forgo having children or use further modification to edit the problem out). This would have implications for the entire species – it may even create sub-species of human beings (Lander et al. 2019, 167). Regarding the welfare of the edited child, and limits on research, Christopher Gyngell et al. argue that all medical research poses safety risks and this is part of the research ethics framework, not a reason to stop it (2017, 504). In their view, the question is who may be harmed, and in their opinion an embryo that has no experiences, and cannot desire to affect its own wellbeing cannot be harmed (an opinion I argued against in Chapter Two, 2.2.2). Harris, too, argues that the same sorts of safety objections were brought against IVF when Louise Brown was first born in 1978, and fear of consequences for future generations can be true of natural reproduction and its ‘genetic lottery’, preventing important medical progress (2016b, 6, 10). Gyngell et al. acknowledge that harms to future people are the most plausible basis for moral objections, then point out that if genome editing replaces preimplantation genetic diagnosis, fewer embryos will be destroyed overall. Further harm can be prevented by ensuring that none of the off-target mutation embryos are allowed to develop to become subject to morally weighty harms (2017, 505). Gyngell et al. further argue, controversially, that GGE should be trialled on diseases that are lethal soon after birth, so that if the GGE technique turns out to be lethal ‘little is lost’ (2017, 505). However, this completely disregards the damage to the would-be parents, emotionally and physically, treating them as if losing an infant or terminating a pregnancy is of no import. Such lack of compassion would not comply with an MMS approach.

Even if the aim of producing a physically healthy future child is successfully met, the term ‘welfare’ (or flourishing, in virtue ethics terms) denotes both physical and psychological elements. There is a risk that the offspring, in being naturally curious about their origins, might feel more like upgraded products than human beings on discovering their difference (Darnovsky and Hasson 2020, 165). The fears for the welfare of any child born using gene editing are: that individuals with

genetic differences or disabilities could be stigmatised and discriminated against; that pressures (both peer and marketing) could affect parents to enhance their children; that children with edited DNA could be psychologically affected; and that some, particularly religious groups, would find redesigning biology morally troubling (Lander et al. 2019, 167).

The second issue is the suspicion that ultimately, GGE will lead to enhancements, not just disease prevention, leading to inequality, discrimination and societal conflict (The Center for Genetics and Society, cited in Gyngell 2017, n.47). The fear is that '[a]ny human feature considered less than optimal could be grounds for embryonic editing', from size, colour, and obesity to intelligence levels (Darnovsky and Hasson 2020, 164). One argument is that in the 20th century, disability was the target of 'eugenic discrimination', and many disability advocates have warned about the dangers of improving the species through such gene editing (Darnovsky and Hasson 2020, 164). Targeted GGE intervention to prevent disability ignores the value of a life with disabilities. One counter-argument is that there are already many therapies such as plastic surgery that can also be used non-therapeutically, but this is not considered sufficient reason to prohibit therapeutic uses, because regulatory tools can be used to limit their uses, as could happen for GGE (Gyngell et al. 2017, 509). This raises the questions of how "therapeutic" ought to be defined, and how this integrates with disability, similar to where we draw the line for embryo use in the Proportionality Principle (4.2.4). There is a moral gap, though, between editing to prevent the inheritance of a disease trait that is life limiting, and positively editing to enhance a future person. Savulescu has argued that leading the best life can be enhanced by promoting non-disease factors such as intelligence or gender, and defends his principle of procreative beneficence that holds that we are morally required to do so in the public interest (2001, 415). Not everyone considers that intelligence is the major factor for flourishing, however, which raises the question of what qualities it takes to lead the best life, and whether they are all genetic. The ability to be kind to others would rate highly in my view, and this may not be a quality that is governed by genes but by environment. Additionally, if GGE were to be used to enhance every embryo's intelligence levels, then the advantage of intelligence would be lost, in that it becomes commonplace, and there is no guarantee that intelligent people are any happier or more likely to lead the best life.

The Nuffield Report argues that distinguishing between acceptable and unacceptable uses faces three difficulties. The first is justifying the implicit normativity in welfare aims, the second is the practical difficulties of distinguishing between permissible and impermissible uses, and third is how to prove that ‘there is something exceptional about genetic manipulations as compared to other possible interventions that prospective parents may make’ (such as choices about education or where they live) that may justify treating them differently (Nuffield 2018, 69 at 3.29).

6.4.3 The difference MMS brings to the GGE debate

Gyngell et al. argue that there is a significant medical case for pursuing GGE’s clinical applications, based on the assumption that ‘current people have moral reasons to prevent the occurrence of disease in future people’ (2017, 499). This succinctly frames the argument for GGE benefiting the welfare of the future child, and in my view, the limits that ought to be placed on its use. Using the guide of how a virtuous hypothetical moral agent would approach the issue of the genetically edited embryo, given that the time limit currently follows the 14-day rule, the MMS view is likely to be permissive of the technique for use in human pregnancy, but only in cases where there is a compelling medical rationale. The embryo to be edited has MS due to at least three criteria: being alive, having the genetic potential to become a person, and being intended for reproduction. Presumably their progenitors, if they are willing to permit GGE, are invested emotionally in plans for their future, and if so, a fourth criterion of relationship is forming. This is slightly higher MMS than the research embryo. Given that our obligations to the research embryo include certain principles to ensure the importance of the research, and importantly that this technique has not only a lifetime’s impact, but generations beyond that, I think our obligations need to be more stringent in regulatory terms than the Principles of Proportionality and Subsidiarity. It is not the purpose of this thesis to make specific recommendations for how this could be achieved, but measures that involve limited special licensing of experts, and an agreed shortlist of heritable diseases that can be ethically justified would seem warranted. It is important to be guided by compassion towards an embryo whose life, without the technique, would involve considerable suffering and be shorter than average. Whatever would ameliorate that seems worth the risk. Once the technique is more

established, the risk of off-target mutations has been minimised and long-term side effects have been assessed, GGE might prove a useful tool in removing or minimising certain morbidities.

The use of GGE for enhancing human characteristics rather than removing life-limiting gene traits is not morally right under the MMS view. The motivation for such enhancements appears to be to gain a competitive edge for the future child, and to be manipulating factors and making choices for children that diminishes their autonomy, which does not comply with the virtue of justice for all. A virtuous moral agent's obligations to future people do include preventing the occurrence of disease where possible, and may include ensuring that there are resources left on earth to sustain at least the next generation. But they do not extend to making judgments on what characteristics will lead to their personal flourishing, and that of their children and grandchildren into perpetuity. Indeed, to foist our values onto their genetic makeup seems hubristic, and not a virtue-focused pursuit.

6.5 Summary

Ethical considerations about the MS of the embryo/fetus now need to encompass the range of ways that this entity can and will be created, as well as the variety of natural developments they will undergo. The entity is valuable not just for their teleological life and genetic potential to develop into a person, but for the possibilities for both pure and applied research. Permission to use them must only be given under strict guidelines, and for important medical benefit. It is now more important than ever to find ways to regulate usage that balances justifiable societal concerns for an entity that is of intrinsic value, and the need to make progress in our understanding of human development and pursuit of treatments to ameliorate serious medical morbidities. Though it is an enormous challenge, it is imperative to find a way of drawing the line between those conditions that qualify as serious medical morbidities to be researched, and those which do not. This needs to be done by drawing together experts in medicine, science, ethics, and the interested general public to produce a framework that balances ethical and scientific research interests, and then developing an international consensus. It has perceptively been observed that what is important is not what

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science can achieve, but what society wants it to achieve, and without public involvement, ‘well-intentioned research could move humanity closer to a future it has not assented to and might not want’ (Jasanoff and Hurlbut 2018, 435). Balancing the twin aims of furthering research on early life development, and the long-promised benefits of therapeutic stem cell research with protecting the potentially valuable futures of persons-to-be, requires a reasoned and truly gradual approach, with clear objectives. To paraphrase Warnock’s words in this chapter heading quotation, there are some barriers that society would prefer are not crossed, and that it would be ethically wrong to cross (DHSS and Warnock 1984, Foreword).

In this chapter I have argued that the MMS approach brings a balance in seeking wisdom through drawing on the virtues of justice and compassion. This should guide the development of new technologies, and maintain a concern for the embryo/fetus as their MS increases at different stages of development. An extension of the 14-day rule may be permissible in certain cases, where the medical and epistemological justification for such an extension can clearly be made to the satisfaction of the HFEA in the UK, and its relevant equivalents worldwide. Where ectogenesis is the only solution to a serious medical problem, then if, and only if, it can be developed and trialled without causing harm to viable embryos/fetuses, it may be worth pursuing, but not as a convenient alternative to viviparous gestation. I argued that the MMS of embryos/fetuses increases through gestation and there must be some major benefit to the subjects themselves to justify their gestation in this way, not just to the prospective parents or society as a whole. GGE is an amazing breakthrough that might enable the correction of inherited genetic mutations that cause severe suffering. However, its use ought to be limited to those cases where selective procedures cannot be used to achieve the aim of avoiding life-limiting conditions, and it is important that the possibility of off-target mutations is eliminated before using the technique on embryos intended for reproduction.

The aim of this chapter was to show how MMS denotes the changing obligations that we have towards the embryo and pre-sentient fetus. By considering intrinsic criteria relevant to embryos/fetuses as well as extrinsic considerations of relationship and function, then outlining how each of these criteria build in importance and require differing levels of obligation, I have

demonstrated that application of a multi-criterial, multi-level approach brings a more nuanced framework for our changing obligations towards the embryo/fetus.

CONCLUSION

*'How the complex web of moral forces vectors out in particular situations is, as Aristotle would say, what the wise man knows'*²⁴

1. Introduction

The aims of this thesis were to clarify how we ought to treat human embryos and fetuses pre-sentience, and discover whether their treatment should change as they develop. The all-or-nothing views about the MS of an embryo have dominated the debate for decades without resolution, whether the context was abortion, stem cell research or embryo selection to avoid heritable diseases. The traditional view that MS should be ascribed on a sole criterion that is necessary and sufficient, and which has led to such an impasse due to lack of agreement on what that criterion might be, has been challenged through the work of Warren (1997) and Dwyer (2011). They established the need for multiple criteria by demonstrating that when more than one is ascribed, the main problems associated with traditional approaches, such as excluding many morally relevant entities, or demanding overly stringent obligations toward an entity that are not warranted, can be overcome.

Most of the philosophical literature (with the exception of Marquis 1999 and 2007) concludes that either the embryo has FMS from conception, which excludes abortion and embryo research, or considers that there are no reasons to ground MS until sentience. This leaves a long gap of up to 26 weeks when the embryo/fetus has no MS. In this thesis I have presented a new model that argues that there are four criteria that may combine to ascribe *some* MS to the embryo/fetus on a multi-criterial basis. Furthermore, as the embryo/fetus rapidly develops, a criterion may strengthen or more criteria may aggregate, so that MS increases over the first 26 weeks of development, as I have demonstrated.

²⁴ Warren Quinn (1984) Abortion, Identity and Loss. *Philosophy & Public Affairs*, 13(1) 54.

Rather than viewing MS through a deontological or consequentialist lens, I have selected a virtue ethics approach, motivated by the twin pursuits of justice and compassion towards entities that I argue are not morally negligible, but nor are they our moral equal. Others have suggested that the concept of MS should be abandoned (Horta 2017). I contend that instead it should be re-evaluated, because MS remains the most widely understood and clear valuation concept in use. It is needed to demarcate those entities whose lives matter, and that we ought to treat carefully.

What a re-evaluation of MS as a multi-criterial, multi-level approach brings is a valuable new way to ascribe and assess criteria, circumstances and motivations appropriate to an entity's development. These in turn relate to a range of obligations, from a weak and easily overridden presumption against interference to stronger obligations for the later fetus. Importantly, this model may be applicable to many other entities that lie on the periphery of the traditional binary concept, as I demonstrated when discussing the family android in Chapter Four (4.2) and MRSA bacteria in Chapter Five (5.2.1).

The re-evaluated MMS given by my model can be applied flexibly, and this graded approach ascribes a minimal MMS to the early embryo that does not demand the same level of protection as a person. My research has argued that there needs to be a minimum of two morally relevant criteria applicable. As a *living* being with *genetic potential* to become a person, the embryo/fetus should not be treated as an object that we can choose to treat as we please, but nor should they be ascribed FMS. They have intrinsic value, but are subject to external influences, such as their *function* in life; whether intended for reproduction or research; and the *relationship* with their progenitors. An embryo produced through IVF for a couple who have parental ambitions will have greater extrinsic value than one resulting from a violent rape, for example, though both have equal intrinsic value. I concluded that there are limitations to how they should be treated that will inevitably differ according to their intended function in life. We should avoid actively destroying an embryo unless there is sufficient moral justification, but in aiming to be both compassionate and just, it is important to balance the embryo/fetus's potential future interests with the important medical pursuit of ameliorating suffering in current lives.

2. Summary of main conclusions

The findings of this thesis should influence ethical decision-making in emerging technologies involving the use of embryos and, with ectogenesis research, fetuses. This section is organised around the findings prompted by my original research sub-questions, which combined to answer the question of what MS ought to be ascribed to the human embryo and fetus.

2.1 MS is the most appropriate concept to use

My first sub-question was, what is the purpose of MS, and is it the most appropriate concept to use? A critical analysis in Chapter Two assessed four main alternatives to MS applicable to the embryo/fetus, (1) special status, (2) symbolic value, (3) moral value and (4) respect. None fix usage perfectly, but MS emerged as the concept closest to everyday understanding, able to apply a normative role by denoting obligations for moral agents. I contended that MS is the most appropriate concept to apply to any entity that will ever have a sake of its own (meaning that it will matter to them whether they live or die). It denotes that an entity should be especially valued above all objects that we can treat as we please, and we have direct obligations towards bearers.

2.2 MS should be based on multiple criteria and multiple levels

The answer to my second sub-question, whether MS must be ascribed on the basis of a sole necessary and sufficient criterion, was refuted in Chapter One on the basis that no single criterion view is unproblematic. Each view is constrained and either excludes entities that ought to be ascribed MS, or ascribes FMS to entities to the detriment of social good. I concur with Warren (1997) and Dwyer's (2011) work that MS should be multi-criterial in Chapter Three. However, I revealed that there was a lack of clarity on how to ascribe multi-criterial MS. Warren offers no guidance, beyond suggesting that a number of considerations must be balanced (1997, 176), and that sentience provides 'a moral floor, not a moral ceiling' (1997, 168) which is suggestive of a range of MS. The idea of 'degrees of moral status' was introduced by DeGrazia (2008). Dwyer supports the idea of degrees of MS, stating that 'different beings have some status-conferring properties but not others and/or can possess any particular status-conferring properties to different

degrees' (2011, 5), but his aim was to argue that children are of greater MS than adults rather than to present a system detailing how MS should apply to other entities.

2.3 There are grounds for ascribing MS to the embryo/fetus

The third sub-question was whether there are any grounds for ascribing MS to the embryo/fetus. In Chapter Three (3.2), I challenged the grounds for arguing that there is no numerical identity between the embryo and the person they will become. I have argued that there is reason to believe that there is continuity between an embryo and a person, because the embryo is the organism that is a precursor to the person (following Gómez-Lobo 2007). All the biological material needed to form the person is present in the embryo, and I concluded that there is genetic continuity from the early cell divisions (Liao 2010). In conjunction with other criteria, this grounds an ascription of a minimum level of MS. However, McMahan's (2002) embodied mind argument and his time relative interest account plausibly suggest that the lack of psychological continuity suggests that the genetic continuity presents only an easily defeasible moral justification for non-interference towards an embryo/fetus.

2.4 Four criteria may interact to ascribe minimal MMS to the embryo

If MS could be ascribed to this entity on the grounds of multiple criteria, as I assert, the fourth sub-question asked which criteria are relevant and how many are sufficient to ground a minimum MS. I concluded that four criteria may interact to ascribe some level of MS to embryos. These are first, life; second, the genetic potential to become a person, both of which are intrinsic; third is developing relationships, initially with their progenitors; and fourth, their intended function, whether for reproduction or for research, both extrinsic factors. My exploration in Chapter Four revealed that two criteria are sufficient to ground MS, though whereas Warren demands that at least one criterion should be relational, rather than intrinsic (1997, 21), I hold that life and potential are sufficient to ascribe MS, and both are intrinsic.

2.5 Ascription of MMS requires levels denoting obligations

My final sub-question was what governs the scope, nature and rules of operation of each range and how does this link with how a moral agent ought to treat the embryo/fetus. Analysis revealed that

each criterion operates to different levels of strength, dependent on the kind of entity and the development of the entity concerned. Part of my original contribution is to suggest that rather than the infinitesimal differences suggested by degrees, there are discrete levels of MS that build towards the portfolio of obligations that FMS brings, on the basis of a combination of intrinsic and extrinsic criteria (Chapter Four). I have argued that MS is better viewed in levels, rather than degrees, influenced by Strong's milestones of fetal development (1997a). However, I contend that levels should be based on strength and aggregation of criteria rather than biological development. Rather than increasing gradually by degree, these criteria increase in levels to provide strong reasons for treating an entity in a certain way as either the criterion develops (their potential to become a person increases as they develop and the spontaneous abortion loss rates drop, for example), or as additional criteria aggregate (for example, relationships with their progenitors develop). However, not all criteria are of equal importance in contributing MS.

In Chapter Five I discussed how to allocate a level within a range for each criterion for the embryo as they develop into a fetus. I also proposed different ways that criteria might be weighted against one another. In order to demonstrate how MMS might apply to other entities beyond *Homo sapiens*, I suggested a way of mapping criteria on a spider map according to the level of strength to which it has developed, first for different developmental stages of the embryo/fetus, then to show comparisons between different entities. This helps us to compare the relative criteria of differing entities, including artificial intelligence and bacteria. An ascription of MMS denotes that all moral agents should behave in particular ways towards an entity, depending on which criteria are applicable, and the strength of level of each criterion. Based on Jaworska and Tannenbaum's work (2018) on MS, these govern the obligations preventing harm, killing, limits to experimentation, and reasons to treat the embryo/fetus fairly. These may be applied with varying levels of strength, from weak to the most stringent reasons. This is undeniably more complex than a uni-criterial model, and I do not claim to have produced a comprehensive system for assessing a hierarchy of MMS. I have, however, indicated possible routes to resolution with the aim of stimulating further research.

The benefits this brings is a more nuanced framework that can be applied to many different entities with vastly differing criteria. It does not exclude those that ought to be included, nor include those that ought not to be. Furthermore, it does not mandate a prohibition against killing where to do so would grant over-protection of the entity, and thereby penalise others with a higher level of MMS. My model is adaptable according to the situation, relationships and the motivation of the moral agent ascribing MS, with obligations increasing as the developing sophistication of the embryo/fetus requires greater protection. I have contended that MS should be re-evaluated as a multi-criterial, multi-level concept, with the moral agent being guided by the virtues of compassion and justice when weighing up the right action to take towards the entity.

2.6 MMS guides decision-making in practical ethical applications

Finally, I have argued that one of the major purposes of ascribing MMS is to guide us in making complex ethical decisions about the increasingly possible uses of the embryo/fetus as medical technologies advance. This is why developing a new approach guided by a different moral theory, virtue ethics, is so vital, to find a middle way that is guided by principles of justice and compassion. MMS is more permissive than a conceptionist approach to MS, because it acknowledges that the embryo donated to research no longer has any potential to develop into a person because of extrinsic circumstances. I have demonstrated how MMS differentiates between the obligations owed to embryos intended for research and those intended for reproduction. It has to be acknowledged that these are difficult issues, as the chapter heading quotation suggests, and the MMS approach shows the importance of seeking wisdom through pursuit of virtue.

I have demonstrated in Chapter Six that virtue ethics forms a strong guide to help us understand how to assess MS and how to apply it to practical situations such as germline gene therapy and complete ectogenesis. Thus, we advance our knowledge while acknowledging that there are moral limits on how to treat the embryo that increase in stringency the closer the fetus gets to birth. Differing levels of MMS require different responses. The protection endowed by MMS is not confined to preventing killing or the infliction of pain, but to the way that an entity is

interfered with in a broader sense, as Jaworska and Tannenbaum (2018) outlined: an increasingly strong obligation not to experiment on it, a strong reason to aid, and a strong reason to treat it fairly.

Goodpaster writes perceptively that '[p]aradigms are crucial components in knowledge – but they can conceal as much as they reveal... I want to venture the belief that the universe of moral consideration is more complex than these paradigms allow' (1978, 310). I concur with Goodpaster in considering that MS is a complex and fascinating field, and there have been several paradigms in the application of MS to the embryo/fetus that needed shattering. The horizons of MS have expanded exponentially from the tradition-led paradigm that MS only applies to human beings, can only be ascribed on the basis of a sole necessary and sufficient criterion, and applies as a binary.

This work concludes that it is important to ascribe a minimal and increasing MMS to the embryo/fetus. It contributes to the literature in evaluating the MS of the human embryo and pre-sentient fetus by synthesising the multi-criterial approach of Warren and Dwyer with the view that there are different levels of MS (though not a continuum of degrees) that correlate with the obligations owed under this concept, in accordance with the way that a virtuous moral agent ought to treat the human embryo/fetus.

3. The road ahead

This multi-criterial, multi-level approach to MS may be of interest to medical practitioners, as well as to law and policy makers looking to refine and clarify our obligations in non-paradigm cases. The findings of this study have a number of important implications for future advances in medical technology, and I hope this work will stimulate further study in the area. There has been much work done on FMS (Warren 1997, Gomez-Lobo 2007, Jaworska and Tannenbaum 2018) and on two-tier systems that ascribe gradually increasing MS to living beings dependent on their degree of similarity with moral persons, and full and equal MS for moral persons and agents (Wetlesen 1999). This is the first work as far as I can distinguish that concentrates on the implications of minimal levels of MS for human embryos and pre-sentient fetuses.

A natural progression of this work is to analyse how to apply the concept of MMS to other marginal cases. It could provide a new focus on how we value others outside the paradigm for MS, such as infants, animals, or cognitively impaired persons that will never fulfil the criteria for personhood. Fluctuations in MS of paradigm persons might also be examined under this more flexible and nuanced system, for example, where MS may decrease due to mental impairment (and where a paternalistic duty of care may limit liberty). Further work could usefully explore relative weightings between criteria, plus how to allocate levels within every criterion. This may also vary between species. It could be particularly helpful in considering how we draw the line between justifiable medical needs and prudential wants in applying the principle of proportionality. We also need to find a workable solution to the waste of potential in the mountain of frozen embryos that are simply waiting to be destroyed (Devolder 2012, 152). This is akin to having a blood bank that is never accessed. Not only does it contravene the Waste Avoidance Principle (Harris 2003), it fails to respect the minimal MS that such an entity bears, whereby their creation and utilisation is for reproductive use or medically important procedures or research, not for mere storage.

Finally, there is scope for an appropriate organisation (possibly the HFEA or Nuffield Council on Bioethics) to commission a research report into ethical issues raised by ectogenesis, in order to stay one step ahead of technological advances and to guide updates in the law. Public consultation to gauge attitudes towards the need for this potentially helpful technology, and to reduce the fear factor through explanation of the scientific aims will be important. There would need to be an ethical and multi-disciplinary inquiry similar to the Committee of Inquiry into Human Fertilisation and Embryology. Its most vital use will be in providing moral agents with an adequate account of how we ought to treat an entity with minimal but increasing MS, as technology continues to open up new possibilities.

REFERENCES

- AACH, J., LUNSHOF, J., IYER, E. and CHURCH, G.M. (2017) Addressing the ethical issues raised by synthetic human entities with embryo-like features. *eLife* [online] 6:e20674. 21 March. Available from <https://doi.org/10.7554/eLife.20674.001> [Accessed 14 June 2018].
- ANAND, K.J.S., SIPPELL, W.G. and AYNSLEY-GREEN, A. (1987) Randomised trial of fentanyl anaesthesia in preterm babies undergoing surgery: effects of the stress response. *Lancet*, 1(8524) 62-66.
- ANAND, K.J.S., ROVNAGHI, C., WALDEN, M. and CHURCHILL, J. (1999) Consciousness, behavior, and clinical impact of the definition of pain. *The Journal of Pain*, 8(2) 64-73.
- ANNAS, J. (2014) Applying Virtue to Ethics (Society of Applied Philosophy Lecture 2014) *Journal of Applied Philosophy*, 32(1) 1-14.
- ANON. (1984) Confused Comment on Warnock. *Nature*, 29 November, 312 389. Available from <https://www.nature.com/articles/312389a0> [Accessed 8 January 2018].
- ANON. (2007) Can embryonic stem cells be made without destroying embryos? *Nature Reports Stem Cells* [online]. 14 June. Springer. Available from <https://www.nature.com/articles/stemcells.2007.28> [Accessed 2 February 2018].
- APPLEBY, J.B. and BREDENOORD, A.L. (2018) Should the 14-day rule for embryo research become the 28-day rule? *EMBO Molecular Medicine* [online]. Available from <https://www.embopress.org/doi/pdf/10.15252/emmm.201809437> [Accessed 10 August 2019].
- ARIMOTO, T. and SATO, Y. (2012) Rebuilding Public Trust in Science for Policy-Making. *Science*, 337(6099) 1176-1177.
- BABYCENTRE MEDICAL ADVISORY BOARD (2019) *13 weeks pregnant: fetal development* [online]. Norwich: Thrive. Available from <https://www.babycentre.co.uk/13-weeks-pregnant> [Accessed 20 February 2020].
- BBC (2009) *Ahimsa*. [online] London: BBC. Available from https://www.bbc.co.uk/religion/religions/jainism/living/ahimsa_1.shtml [Accessed 24 January 2020].
- BAERTSCHI, B. (2008) The question of the embryo's moral status. *Bioethica Forum*, 1(2) 76-80.
- BAHADUR, G. (2003) The moral status of the embryo: the human embryo in UK Human Fertilisation and Embryology (Research Purposes) Regulation 2001 debate. *Reproductive BioMedicine Online*, 7(1) 12-16.
- BAIER, A.C. (1985) What do Women want in a Moral Theory? *Noûs*, 19(1) 53-63.
- BALL, P. (2005) Embryos up for adoption. *Nature*, 10 June. Available from <https://doi.org/10.1038/news050606-16> [Accessed 15 December 2017].

- BASSEN, P. (1982) Present Sakes and Future Prospects: The Status of Early Abortion. *Philosophy and Public Affairs*, XI(4) 314-337.
- BAYLES, M.D. (1976) Harm to the Unconceived. *Philosophy and Public Affairs*, 5(3) 292-304.
- BEAUCHAMP, T.L. (1999) The Failure of Theories of Personhood. *Kennedy Institute of Ethics Journal*, 9(4) 309-324.
- BEAUCHAMP, T.L. and CHILDRESS, J.F. (2001) *Principles of Biomedical Ethics*. Fifth edition. Oxford: Oxford University Press.
- BEVILACQUA, L. and GOLDMAN, D. (2009) Genes and Addictions. *Clinical Pharmacology & Therapeutics*, Apr 85(4) 359-361.
- BEYLEVELD, D. (2000) The moral status of the human embryo and fetus. In: Hille Haker and Deryck Beyleveld (eds.) *The ethics of genetics in human procreation*. Aldershot: Ashgate, 59-85.
- BERG, J. (2007) Of Elephants and Embryos: A Proposed Framework for Legal Personhood. *Hastings Law Journal*, 59(2) 369-406.
- BODKIN, H. (2017) Multiple sclerosis: new stem cell transplantation may ‘freeze’ disease progression. *The Telegraph* [online]. 21 February. Available from <https://www.telegraph.co.uk/science/2017/02/20/new-stem-cell-treatment-freezes-multiple-sclerosis/> [Accessed 16 November 2017].
- BOONIN, D. (2003) *A Defense of Abortion*. Cambridge: Cambridge University Press.
- BORTOLOTTI, L. (2007) Disputes over Moral Status: Philosophy and Science in the Future of Bioethics. *Health Care Analysis*, 15 153-158.
- BORTOLOTTI, L. and HARRIS, J. (2005) Stem cell research, personhood and sentience. *Reproductive BioMedicine Online*, 10 68-75.
- BORTOLOTTI, L. and HARRIS, J. (2006) Embryos and Eagles: Symbolic Value in Research and Reproduction. *Cambridge Quarterly of Healthcare Ethics*, 15 22-34.
- BRANNIGAN, M. (2004) Fixations on the Moral Status of the Embryo. In: J.M. Routledge Humber and R.F. Almeder (eds.) *Stem Cell Research*. Totowa, New Jersey, USA: Humana Press, 43-57.
- BRAZIER, M. (1988) Embryos’ “Rights”: Abortion and Research. In: M.D.A. Freeman (ed.) *Medicine, Ethics and Law*. Andover, Hants: Stevens, 9-22.
- BRAZIER, M. (1999) Regulating the Reproduction Business? *Medical Law Review*, (Summer) 7(2) 166-193.
- BRITISH ASSOCIATION OF PERINATAL MEDICINE (2019) *Perinatal Management of Extreme Preterm Birth Before 27 weeks of Gestation: A BAPM Framework for Practice*. [online]. Available from <https://www.bapm.org/resources/80-perinatal-management-of-extreme-preterm-birth-before-27-weeks-of-gestation-2019> [Accessed 28 March 2020].
- BROWNSWORD, R. (2003) Bioethics Today, Bioethics Tomorrow: Stem Cell Research and the Dignitarian Alliance. *Notre Dame Journal of Law, Ethics & Public Policy*, 15 15-51.

- BUCKLE, S. (1988) Arguing from Potential. *Bioethics*, 2(3) 227-253.
- BUSH, G.W. (2001) *President Discusses Stem Cell Research*. [online] The White House, 9 August. Available from <https://georgewbush-whitehouse.archives.gov/news/releases/2001/08/20010809-2.html> [Accessed 3 March 2020].
- BUXTON, J. (2017) Comment: What's so special about the status of the embryo? *BioNews* 886, 30 January. Available from https://www.bionews.org.uk/page_95869 [Accessed 30 January 2017].
- CAFASSO, J. (2018) How to Test and Increase Your Pain Tolerance. *Healthline*. Available from <https://www.healthline.com/health/high-pain-tolerance> [Accessed 28 January 2020].
- CALLAHAN, D. (1970) *Abortion: Law, Choice and Morality*. New York, N.Y., USA: Macmillan Publishing Co. Inc.
- CALLAHAN, D. (1995) The Puzzle of Profound Respect. *Hastings Center Report*, 25(1) 39-40.
- CALLAHAN, D. (2001) Human Embryo Research: Respecting What We Destroy? *Hastings Center Report*, 31(4) 4.
- CALLICOTT, J.B. (1980) Animal Liberation: A Triangular Affair. *Environmental Ethics*, 2(4) Winter 311-338.
- CALLICOTT, J.B. (1986) On the Intrinsic Value of Nonhuman Species. In: Bryan G. Norton (ed.) *The Preservation of Species*. Princeton, N.J., USA: Princeton University Press.
- CALLICOTT, J.B. (1989) *In Defense of the Land Ethic: Essays in Environmental Philosophy*. Albany, N.Y., USA: State University of New York Press.
- CAMOSY, C. (2013) Concern for our vulnerable prenatal and neonatal children: a brief reply to Giubilini and Minerva. *Journal of Medical Ethics*, 39(5) 296-298.
- CAMPONESI, S. (2018) Rearranging Deck Chairs on a Sinking Ship? Some Reflections on Ethics and Reproduction Looking Back at 2017. *Bioethical Inquiry* [online]. 26 January. Available from www.academia.edu/35774374/Rearranging_Deck_Chairs_on_a_Sinking_Ship_Some_Reflections_on_Ethics_and_Reproduction_Looking_Back_at_2017_and_Ahead_at_2018 [Accessed 2 February 2018].
- CANNOLD, L. (1995) Women, Ectogenesis and Ethical Theory. *Journal of Applied Philosophy*, 12(1) 55-64.
- CASCIO, C.J.; MOORE, D. and McGLONE, F. (2019) Social touch and human development. *Developmental Cognitive Neuroscience*, 35 5-11.
- CATHOLIC BISHOPS' CONFERENCE OF ENGLAND AND WALES (1980) *Abortion and the Right to Life*. London: Catholic Trust Society.
- CAVALIERE, G. (2017) A 14-day limit for bioethics: the debate over human embryo research. *BMC Medical Ethics*, 18(38) 1-12. Available from <https://bmcmedethics.biomedcentral.com/articles/10.1186/s12910-017-0198-5> [Accessed 31 July 2017].

- CAVALIERE, G., DEVOLDER, K. and GIUBILINI, A. (2019) Regulating Genome Editing: For an Enlightened Democratic Governance. *Cambridge Quarterly of Healthcare Ethics*, 28 76-88.
- CAVALIERE, G. (2020) Gestation, equality and freedom: ectogenesis as a political perspective. *Journal of Medical Ethics*, 46 76-82.
- CHAN, S. (2017) How to Rethink the Fourteen Day Rule. *Hastings Center Report*, 47(3) 5-6.
- CHAN, S. and HARRIS, J. (2010) Consequentialism without Consequences: Ethics and Embryo Research. *Cambridge Quarterly of Healthcare Ethics*, 19 61-74.
- CHARO, R.A. (1994) The Hunting of the Snark: The Moral Status of Embryos, Right-to-Lifers, and Third World Women. *Stanford Law & Policy Review*, 6(2) 11-37.
- CICOVACKI, P. (2009) *Albert Schweitzer's Ethical Vision: A Sourcebook*. Oxford: Oxford University Press.
- COHEN, C.B. (2001) Human Embryo Research: Respecting What We Destroy? *Hastings Center Report*, 31(4) 4-5.
- CONGREGATION FOR THE DOCTRINE OF FAITH (CDF) (1987) *Donum Vitae* [online]. Rome, Italy: Vatican. Available from http://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_con_cfaith_doc_19870222_respect-for-human-life_en.html [Accessed 27 July 2017].
- CONNOR, S. (2016) Inside the 'black box' of human development. *The Guardian* [online], 5 June. Available from <https://www.theguardian.com/science/2016/jun/05/human-development-ivf-embryos-14-day-legal-limit-extend-inside-black-box> [Accessed 22 February 2018].
- CSÁSZÁR-NAGY, N. and BÓKKON, I. (2018) Mother-newborn separation at birth in hospitals: A possible risk for neurodevelopmental disorders? *Neuroscience & Biobehavioral Reviews*, 84 (January) 337-351. Available from <https://doi.org/10.1016/j.neubiorev.2017.08.013> [Accessed 27 June 2019].
- CURRAN, M.A (2019) Fetal Development. *Perinatology.com* [online]. Available from <http://perinatology.com/Reference/Fetal%20development.htm> [Accessed 28 March 2020].
- DANIELS, N. (1981) Health-Care Needs and Distributive Justice. *Philosophy & Public Affairs*, 10(2) 146-179.
- DARNOVSKY, M. and HASSON, K. (2020) CRISPR's Twisted Tales: Clarifying Misconceptions about Heritable Genome Editing. *Perspectives in Biology and Medicine*, 63(1) 155-176.
- DARWALL, S.L. (1977) Two Kinds of Respect. *Ethics*, 88(1) 36-49.
- DAVIS, C. (2019a) The Boundaries of Embryo Research: Extending the Fourteen-Day Rule. *Bioethical Inquiry*, 16 133-140.
- DAVIS, N. (2019b) Artificial Womb: Dutch researchers given €2.9m to develop prototype. *The Guardian* [online], 8 October. Available from <https://www.theguardian.com/society/2019/oct/08/artificial-womb-dutch-researchers-given-29m-to-develop-prototype> [Accessed 10 March 2020].

- DECKERS, J. (2005) Why Current UK Legislation on Embryo Research is Immoral. How the Argument from Lack of Qualities and the Argument from Potentiality Have Been Applied and Why They Should Be Rejected. *Bioethics*, 19(3) 251-271.
- DEGLINCERTI, A., CROFT, G.F., PIETILA, L.N., ZERNICKA-GOETZ, M., SIGGIA, E.D. and BRIVANLOU, A.H. (2016) Self-organization of the in vitro attached human embryo. *Nature*, 4 May, 533(7602) 251-4.
- DeGRAZIA, D. (2005) *Human Identity and Bioethics*. Cambridge: Cambridge University Press.
- DeGRAZIA, D. (2006) Moral Status, Human Identity and Early Embryos: A Critique of the President's Approach. *Journal of Law, Medicine and Ethics*, 34(1) 49-57.
- DeGRAZIA, D. (2007) Must we have full moral status throughout our existence? A reply to Alfonso Gómez-Lobo. *Kennedy Institute of Ethics Journal*, 17(4) 297-310.
- DeGRAZIA, D. (2008) Moral Status as a Matter of Degree? *The Southern Journal of Philosophy*, XLVI 181-198.
- DeGRAZIA, D. (2012) Genetic enhancement, post-persons and moral status: a reply to Buchanan. *Journal of Medical Ethics*, 38(3)135-139.
- DE LACEY, S., ROGERS, W., BRAUNACK-MAYER, A., AVERY, A., SMITH, D., RICHARDS, B. (2012) Perceptions of embryo status and embryo use in an Australian community. *Reproductive BioMedicine Online*, 24 727-744. Available from <https://doi.org/10.1016/j.rbmo.2012.01.014> [Accessed 2 March 2020].
- DEPARTMENT OF HEALTH (2017) *Abortion Statistics England and Wales: 2017*. Available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/714183/2017_Abortion_Statistics_Commentary.pdf [Accessed 14 September 2018].
- DEPARTMENT OF HEALTH AND SOCIAL SECURITY (DHSS) and WARNOCK, M. (1984) *Report of the Committee of Inquiry into Human Fertilisation and Embryology*. Cmnd 9314. London: HMSO.
- DEPARTMENT OF HEALTH, EDUCATION AND WELFARE (1979) *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research*. Available from https://www.hhs.gov/ohrp/sites/default/files/the-belmont-report-508c_FINAL.pdf [Accessed 28 August 2019].
- DERBYSHIRE, S.W.G. (2006) Can fetuses feel pain? *British Medical Journal*, 332(7546) 909-912.
- DERBYSHIRE, S.W. (2008) Fetal Pain: Do We Know Enough to Do the Right Thing? *Reproductive Health Matters*, 16(31 Supp.) 117-126.
- DEVANEY, S. (2012) Human Embryos in Stem Cell Research: Property and Recompense. In: Muireann Quigley, Sarah Chan and John Harris (eds.) *Stem Cells: New Frontiers in Science & Ethics*. London: World Scientific, 107-136.
- DEVOLDER, K. (2005a) Creating and sacrificing embryos for stem cells. *Journal of Medical Ethics*, 31 366-370.

- DEVOLDER, K. (2005b) Human embryonic stem cell research: why the discarded-created-distinction cannot be based on the potentiality argument. *Bioethics*, 19(2) 167-186.
- DEVOLDER, K. (2012) Against the Discarded-Created Distinction in Embryonic Stem Cell Research. In: Muireann Quigley, Sarah Chan and John Harris (eds.) *Stem Cells: New Frontiers in Science and Ethics*. London: World Scientific Publishing, 137-161.
- DEVOLDER, K. (2015) *The ethics of embryonic stem cell research*. Oxford: Oxford University Press.
- DEVOLDER, K. (2017) The statutory time limit for maintaining human embryos in culture. In: Nuffield Council on Bioethics (eds.) *Human Embryo Culture: Discussions concerning the statutory time limit for maintaining human embryos in culture in the light of some recent scientific developments*, 78-83. Available from <https://www.nuffieldbioethics.org/publications/time-limits-on-maintaining-human-embryos-in-research> [Accessed 8 February 2018].
- DEVOLDER, K. and HARRIS, J. (2007) The Ambiguity of the Embryo: Ethical Inconsistency in the Human Embryonic Stem Cell Debate. *Metaphilosophy*, 38(Nos 2-3) 153-169.
- DILLON, R.S. (2018) Respect. In: Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy* [online]. Available from <https://plato.stanford.edu/archives/spr2018/entries/respect/> [Accessed 14 August 2018].
- DIMOND, R. (2015) Social and ethical issues in mitochondrial donation. *British Medical Bulletin*, 115(1) 173-182.
- DONNE, J. (1624) *Meditations XVII*. Available from <http://www.online-literature.com/donne/409/> [Accessed 1 August 2017].
- DWORKIN, R. (1994) *Life's Dominion: an argument about abortion, euthanasia and individual freedom*. New York, N.Y., USA: Vintage Books.
- DWYER, J. (2011) *Moral Status & Human Life: The Case for Children's Superiority*. New York, N.Y., USA: Cambridge University Press.
- EHRICH, K., WILLIAMS, C. and FARSIDES, B. (2010) Fresh or frozen? Classifying 'spare' embryos for donation to human embryonic stem cell research. *Social Science & Medicine*, 71(12-6) 2204-2211.
- ELVES, C. and MCGUINNESS, S. (2017) The statutory time limit for maintaining human embryos in culture. In: Nuffield Council on Bioethics (eds.) *Human Embryo Culture: Discussions concerning the statutory time limit for maintaining human embryos in culture in the light of some recent scientific developments*, 13-35. Available from <https://www.nuffieldbioethics.org/publications/time-limits-on-maintaining-human-embryos-in-research> [Accessed 8 February 2018].
- EMRAN, A.N. (2015) Islamic Bioethics at the End of Life: Why *Mukallaf* Status Cannot Be the Criterion of Defining the Life That Should Be Saved. *The American Journal of Bioethics*, 15(1) 27-8.
- ENGELHARDT Jr., H.T. (1986) *The Foundations of Bioethics*. New York, NY., USA: Oxford University Press.

- ENGLISH, J. (1975) Abortion and the Concept of a Person. *Canadian Journal of Philosophy*, 5(2) 233-243.
- ESHRE (European Society for Human Reproduction and Embryology) Taskforce on Ethics and Law (2001) The moral status of the pre-implantation embryo: ESHRE Taskforce on Ethics and Law. *Human Reproduction*, 16(5) 1046-1048.
- ESHRE (2018) *More than 8 million babies born from IVF since the world's first in 1978*. [press release] 3 July. Available from <https://www.eshre.eu/Annual-Meeting/Barcelona-2018/ESHRE-2018-Press-releases/De-Geyter> [Accessed 15 May 2020].
- ETHICS ADVISORY BOARD, Department of Health, Education, and Welfare (1979) *Report and Conclusions: HEW Support of Research Involving Human In Vitro Fertilisation and Embryo Transfer*. May 4. Washington D.C., USA: US Government Printing Office. Available from https://repository.library.georgetown.edu/bitstream/handle/10822/559350/HEW_IVF_report.pdf?sequence=1&isAllowed=y [Accessed 20 February 2018].
- FEINBERG, J. (1984) *Harm to Others*. Oxford: Oxford University Press.
- FINNIS, J. (2000) The Priority of Persons. In: J. Horder (ed.) *Oxford essays in jurisprudence: Fourth series*. Oxford: Oxford University Press.
- FIRESTONE, S. (2015) *The Dialectic of Sex: The Case for Feminist Revolution*. Second edition. London: Verso.
- FORD, M. (2009) Nothing and Not-Nothing: Law's Ambivalent Response to Transformation and Transgression at the Beginning of Life. In: Stephen W. Smith and Ronan Deazley (eds.) *The Legal, Medical and Cultural Regulation of the Body: Transformation and Transgression*. Farnham, Surrey: Ashgate, 21-46.
- FOWERS, B.J. (2015) The Accidental Virtue Scholar. *The Jubilee Centre for Character & Virtues Insight Series*. Birmingham: University of Birmingham. Available from <https://www.jubileecentre.ac.uk/userfiles/jubileecentre/pdf/insight-series/FowersB.pdf> [Accessed 15 May 2020].
- FOX, M. and McGUINNESS, S. (2016) The Politics of Muddling Through: Categorising Embryos. In: Catherine Stanton, Anne Maree Farrell, Sarah Devaney, Alex Mullock (eds.) *Pioneering Healthcare Law: Essays in Honour of the Work of Margaret Brazier*. Abingdon, Oxfordshire: Routledge, 199-210.
- FOX, M. and MORETON, K. (2015) *Re MB (An Adult: Medical Treatment)* [1997] and *St. George's Healthcare NHS Trust v S* [1998]: The Dilemma of the Court-ordered Caesarean. In: Jonathan Herring and Jesse Wall (eds.) *Landmark Cases in Ethical Law*. London: Bloomsbury, 145-174.
- FRANCIS CRICK INSTITUTE (2016) *HFEA approval for new genome editing techniques*. [online] London: Francis Crick Institute. Available from <https://www.crick.ac.uk/news/science-news/2016/02/01/hfea-decision/> [Accessed 20 February 2018].
- FRANCIS CRICK INSTITUTE (2019) *Human genome editing licence renewed*. [online] London: Francis Crick Institute. Available from https://www.crick.ac.uk/news/2019-10-23_human-genome-editing-licence-renewed [Accessed 18 December 2019].

- GALLAGHER, J. (2016) *Embryo study shows 'life's first steps'*. [online] London: BBC, 4 May. Available from: <http://www.bbc.co.uk/news/health-36202622> [Accessed 3 February 2017].
- GARDINER, P. (2003) A Virtue Ethics approach to moral dilemmas in medicine. *Journal of Medical Ethics*, 29 297-302.
- GELFAND, S. (2006) Ectogenesis and the Ethics of Care. In: Gelfand, S. and Shook, J.R. (eds.) *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*. Amsterdam, Netherlands: Rodopi B.V., 89-107.
- GERT, B. and GERT, J. (2017) The definition of morality. In: Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy* [online]. Available from <https://plato.stanford.edu/archives/fall2017/entries/morality-definition/> [Accessed 11 February 2020].
- GIBSON, S. (2007) Uses of Respect and Uses of the Human Embryo. *Bioethics*, 21(7) 370-378.
- GILLIGAN, C. (1982) *In a Different Voice*. Cambridge, Massachusetts, USA: Harvard University Press.
- GIUBILINI, A. and MINERVA, F. (2013) After-birth abortion: why should the baby live? *Journal of Medical Ethics*, 39(5) 261-263.
- GÓMEZ-LOBO, A. (2004a) On the Ethical Evaluation of Stem Cell Research: Remarks on a Paper by N. Knoepffler. *Kennedy Institute of Ethics Journal*, 14(1) 75-80.
- GÓMEZ-LOBO, A. (2004b) Does Respect for Embryos Entail Respect for Gametes? *Theoretical Medicine*, 25 199-208.
- GÓMEZ-LOBO, A. (2005) On Potentiality and Respect for Embryos: A Reply to Mary Mahowald. *Theoretical medicine and bioethics*, 26 105-110.
- GÓMEZ-LOBO, A. (2007) Individuality and Human Beginnings: A Reply to David DeGrazia. *Journal of Law, Medicine and Ethics*, 35(3 Fall) 457-462.
- GOODPASTER, K.E. (1978) On being morally considerable. *The Journal of Philosophy*, 75(6) 308-325.
- GREEN, R.M. (2001) *The Human Embryo Research Debates: Bioethics in the Vortex of Controversy*. Oxford: Oxford University Press.
- GROSSU, A.O. (2017) What Science Reveals About Fetal Pain. *Family Research Council Issue Analysis IS15A01*. Available from <https://downloads.frc.org/EE/EF15A104.pdf> [Accessed 29 March 2020].
- GYNGELL, C.; DOUGLAS, T.; SAVULESCU, J. (2017) The Ethics of Germline Gene Editing. *Journal of Applied Philosophy*, 34(4) 498-513.
- HACKER-WRIGHT, J. (2007) Moral Status in Virtue Ethics. *Philosophy* 82(3) 449-473.
- HAIMES, E., PORZ, R., SCULLY, J. and REHMANN-SUTTER, C. (2008) "So, what is an embryo?" A comparative study of the views of those asked to donate embryos for hESC research in the UK and Switzerland. *New Genetics and Society*, 27(2) 113-126.

- HALL, J.G. (2003) Twinning. *The Lancet*, 362 735-43.
- HANSARD: HOUSE OF LORDS (2002) *Stem Cell Research*. [Select Committee Report] 5 December 2002, 641, c1327. Available from [https://hansard.parliament.uk/Lords/2002-12-05/debates/21aa4d92-7fca-4786-bd2a-53b468dfe49c/StemCellResearchSelectCommitteeReport?highlight=stem cell research select committee 2002 - contribution-eb1eba30-ced9-41cf-8fff-62b2ce523144](https://hansard.parliament.uk/Lords/2002-12-05/debates/21aa4d92-7fca-4786-bd2a-53b468dfe49c/StemCellResearchSelectCommitteeReport?highlight=stem%20cell%20research%20select%20committee%202002%20-%20contribution-eb1eba30-ced9-41cf-8fff-62b2ce523144) [Accessed 11 July 2018].
- HARE, R.M. (1999) Abortion and the Golden Rule. In: Helga Kuhse and Peter Singer (eds.) *Bioethics: An Anthology*. Oxford: Blackwell, 58-68.
- HARMAN, E. (1999) Creation Ethics: The moral status of early fetuses and the ethics of abortion. *Philosophy & Public Affairs*, 28(4) 310-324.
- HARMAN, E. (2003) The Potentiality Problem. *Philosophical Studies*, 114 173-198.
- HARMAN, E. (2007) How is the ethics of stem cell research different from the ethics of abortion? *Metaphilosophy*, 38(2-3) 207-225.
- HARRIS INTERACTIVE (2010) *Embryonic Stem Cell Research Receives Widespread Support from Americans*. [press release] 7 October. Available from <https://theharrispoll.com/wp-content/uploads/2017/12/Harris-Interactive-Poll-HealthDay-2010-10.pdf> [Accessed 9 September 2018].
- HARRIS, J. (1983) In Vitro Fertilisation: The Ethical Issues. *The Philosophical Quarterly*, 33 217-237.
- HARRIS, J. (1985a) Full humans and empty morality. *The Philosophical Quarterly*, 35(138) 70-73.
- HARRIS, J. (1985b) *The Value of Life: An Introduction to Medical Ethics*. London: Routledge Kegan Paul.
- HARRIS, J. (1999) The Concept of the Person and the Value of Life. *Kennedy Institute of Ethics Journal*, 9(4) 293-308.
- HARRIS, J. (2003) Stem Cells, Sex, and Procreation. *Cambridge Quarterly of Healthcare Ethics*, 12(4) 353-371.
- HARRIS, J. (2016a) It's time to extend the 14-day limit. *The Guardian* [online]. 6 May. Available from <https://www.theguardian.com/commentisfree/2016/may/06/extend-14-day-limit-embryo-research> [Accessed 15 June 2016].
- HARRIS, J. (2016b) Germline Modification and the Burden of Human Existence. *Cambridge Quarterly of Healthcare Ethics*, 25 6-18.
- HELD, V. (2015) *The Ethics of Care: Personal, Political, Global*. Oxford: Oxford University Press.
- HERSHENOV, D. and HERSHENOV, R. (2015) Morally relevant potential. *Journal of Medical Ethics*, 41 268-271.
- HERTENSTEIN, M. J. (2002). Touch: Its communicative functions in infancy. *Human Development*, 45 70-94.

- HILL, M. (2017a) *Revisiting the 14-day rule*. [online] London: BBC Radio 4. Part 1, 23 January, 21:00. Available from <http://www.bbc.co.uk/programmes/b088fch7> [Accessed 23 January 2017]. Part 2, 30 January, 21:00. Available from <http://www.bbc.co.uk/programmes/b08bqssd> [Accessed 4 February 2017].
- HILL, M. (2017b) *Is it time for embryo research rules to be changed?* [online] London: BBC. Available from <http://www.bbc.co.uk/news/health-38635083> [Accessed 24 February 2017].
- HOLM, S. (2002) Going to the Roots of the Stem Cell Controversy. *Bioethics*, 16(6) 493-507.
- HOLM, S. (2003) The Ethical Case against Stem Cell Research. *Cambridge Quarterly of Healthcare Ethics*, 12 372–383.
- HORTA, O. (2017) Why the Concept of Moral Status Should be Abandoned. *Ethical Theory and Moral Practice*, 20(4) 899-910.
- HOUSE OF COMMONS SCIENCE AND TECHNOLOGY COMMITTEE (2005) *Human Reproductive Technologies and the Law: Fifth Report of Session 2004-05*. London: The Stationery Office Ltd. Vol. I 24.
- HUMAN FERTILISATION & EMBRYOLOGY AUTHORITY (2013) *Mitochondria replacement consultation: Advice to Government*. Available from https://www.hfea.gov.uk/media/2618/mitochondria_replacement_consultation_-_advice_for_government.pdf [Accessed 20 March 2020].
- HUMAN FERTILISATION & EMBRYOLOGY AUTHORITY (2018) *Fertility Treatment 2014-16: Trends and figures*. Available from <https://www.hfea.gov.uk/media/2563/hfea-fertility-trends-and-figures-2017-v2.pdf> [Accessed 30 July 2018].
- HUME, D. (1966) An Enquiry Concerning the Principles of Morals. (Orig. pub. 1751) In L.A. Selby-Bigge (ed.) *Enquiries Concerning Human Understanding and Concerning the Principles of Morals*. Oxford: Oxford University Press.
- HURLBUT, J.B., HYUN, I., LEVINE, A.D., LOVELL-BADGE, R., LUNSHOF, J.E., MATTHEWS, K.R.W., MILLS, P., MURDOCH, A., PERA, M.F., SCOTT, C.T., TIZZARD, J., WARNOCK, M., ZERNICKA-GOETZ, M., ZHUO, Q. & ZOLOTH, L. (2017) Revisiting the Warnock rule. *Nature Biotechnology*, 35(11) 1029-1042.
- HURSTHOUSE, R. (1987) *Beginning Lives*. Oxford: Basil Blackwell.
- HURSTHOUSE, R. (1999) *On Virtue Ethics*. Oxford: Oxford University Press.
- HURSTHOUSE, R. (2013) Moral Status. In Hugh LaFollette (ed.) *The International Encyclopedia of Ethics*. Chichester, W. Sussex: Wiley-Blackwell. 3422-3432.
- HURSTHOUSE, R. and PETTIGROVE, G. (2018) Virtue Ethics. In: Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy* [online]. (Winter). Available from <https://plato.stanford.edu/archives/win2018/entries/ethics-virtue/> [Accessed 30 April 2019].
- HUXLEY, A. (1932) *Brave New World*. London: Chatto & Windus.
- HYUN, I., WILKERSON, A. and JOHNSTON, J. (2016) Embryology policy: Revisit the 14-day rule. *Nature*, 4 May, 533 169-171.

- IGLESIAS, T. (1984) In vitro fertilisation: the major issues. *Journal of Medical Ethics*, 1 32-37.
- IGLESIAS, T. (1990) *IVF and Justice: Moral, Social and Legal Issues Related to Human in vitro fertilisation*. London: The Linacre Centre for Health Care Ethics.
- JASANOFF, S. AND HURLBUT, J.B. (2018) A global observatory for gene editing. *Nature*, 21 March, 555 435-437.
- JAWORSKA, A. (2007) Caring and Full Moral Standing. *Ethics*, 117(3) 460-497.
- JAWORSKA, A. and TANNENBAUM, J. (2014) Person-Rearing Relationships as a Key to Higher Moral Status. *Ethics*, 124(2) 242-271.
- JAWORSKA, A. and TANNENBAUM, J. (2018) The Grounds of Moral Status. In: Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy* [online]. Available from <https://plato.stanford.edu/archives/spr2018/entries/grounds-moral-status/> [Accessed 18 August 2018]. First published Summer 2013 [Accessed 18 April 2016].
- JONES, D.A. (2011) The “Special Status” of the Human Embryo in the United Kingdom: An Exploration of the Use of Language in Public Policy. *Human Reproduction and Genetic Ethics*, 17(1) 66-83.
- JONES, D. (2017) A response to the background paper. In: Nuffield Council on Bioethics (eds.) *Human Embryo Culture: Discussions concerning the statutory time limit for maintaining human embryos in culture in the light of some recent scientific developments*, 69-72. Available from <https://www.nuffieldbioethics.org/publications/time-limits-on-maintaining-human-embryos-in-research> [Accessed 8 February 2018].
- JOYCE, G. (2017) Brexit Data: Post-Truth Politics and the EU Referendum. *Brandwatch React*. Available from <https://www.brandwatch.com/blog/react-brexit-post-truth/> [Accessed 3 May 2020].
- KAGAN, S. (2016) What’s Wrong with Speciesism? (Society of Applied Philosophy Annual Lecture 2015). *Journal of Applied Philosophy*, 33(1) 1-21.
- KAMM, F. (2007) *Intricate Ethics: Rights, Responsibilities and Permissible Harm*. New York, N.Y, USA: Oxford University Press.
- KANT, I. (2008) Groundwork of the Metaphysics of Morals (orig. pub. 1785). In: Thomas Kingsmill Abbott (trs.) *On the Metaphysics of Morals and Ethics*. Radford, VA, USA: A&D Publishing.
- KAPLAN, J., FRIAS, L. and McFALL-JOHNSEN, M. (2020) A third of the global population is on coronavirus lockdown – here’s our constantly updated list of countries and restrictions. *Business Insider*. April 17. Available from <https://www.businessinsider.com/countries-on-lockdown-coronavirus-italy-2020-3?r=US&IR=T> [Accessed 19 April 2020].
- KIEFER, A. (2015) Lies, Damned Lies and Miscarriage Statistics. *Expecting Science* [online]. Available from <https://expectingscience.com/2015/08/26/lies-damned-lies-and-miscarriage-statistics/> [Accessed 27 February 2020].

- KINGMA, E. (2016) *Were You a Part of Your Mother? The Metaphysics of Pregnancy*. [online lecture] King's College London, 13 October. Available from <http://philosophyandmedicine.org/events/were-you-a-part-of-your-mother-the-metaphysics-of-pregnancy/> [Accessed 10 September 2017].
- KINGMA, E. (2017) Moral status and the properties of the embryo. In: Nuffield Council on Bioethics (eds.) *Human Embryo Culture: Discussions concerning the statutory time limit for maintaining human embryos in culture in the light of some recent scientific developments*, 73-77. Available from <https://www.nuffieldbioethics.org/publications/time-limits-on-maintaining-human-embryos-in-research> [Accessed 8 February 2018].
- KITTAY, E.F. (2005) At the Margins of Moral Personhood. *Ethics*, 116(Oct) 100-131.
- KLUGE, E.W. (1988) When Cesarean Section Operations Imposed by Court are Justified. *Journal of Medical Ethics*, 14(4) 206-211.
- KNAPTON, S. (2016) Stroke survivors walk again after Stanford injects stem cells into brain. *The Telegraph* [online] 3 June. Available from <http://www.telegraph.co.uk/science/2016/06/03/stroke-survivors-walk-again-after-stanford-injects-stem-cells-in/> [Accessed 16 November 2017].
- KRAUTHAMMER, C. (2009) President Obama and Stem Cells – Science Fiction. *Washington Post* [online] 13 March. Available from <http://www.washingtonpost.com/wp-dyn/content/article/2009/03/12/AR2009031202764.html?noredirect=on> [Accessed 28 February 2018].
- KUHSE, H. and SINGER, P. (1985) *Should the Baby Live? The Problem of Handicapped Infants*. Oxford: Oxford University Press.
- KUHSE, H. and SINGER, P. (1990) Individuals, humans and persons: the issue of moral status. In Peter Singer, Helga Kuhse, Stephen Buckle, Karen Dawson, and Pascal Kasimba (eds.) *Embryo Experimentation*. Cambridge: Cambridge University Press, 65-75.
- LANDER, E., BAYLIS, F., ZHANG, F., CHARPENTIER, E., BERG, P. and specialists from seven countries (2019) Adopt a moratorium on heritable genome editing. *Nature*, 14 March, 567 165-168.
- LARSEN, E.C., CHRISTIANSEN, O.B., KOLTE, A.M. and MACKLON, N. (2013) New insights into mechanisms behind miscarriage. *BMC Medicine* [online]. 11(1) 154. Available from <https://bmcmmedicine.biomedcentral.com/articles/10.1186/1741-7015-11-154> [Accessed 3 September 2016].
- LEOPOLD, Aldo (1949) The Land Ethic. In: Aldo Leopold (author) *A Sand County Almanac and Sketches Here and There*. Oxford: Oxford University Press, 201-226.
- LIANG, P., XU, Y., ZHANG, X., DING, C., HUANG, R., ZHANG, Z., LV, J., XIAOWEI, X., CHEN, Y., LI, Y., SUN, Y., BAI, Y., SONGYANG, Z., MA, W., ZHOU, C. & HUANG, J. (2015) CRISPR/Cas9-mediated gene editing in human tripronuclear zygotes. *Protein & Cell*, 6 363-372.
- LIAO, S.M. (2006) The Embryo Rescue Case. *Theoretical medicine and bioethics*, 27 141-147.
- LIAO, S.M. (2010) The Basis of Human Moral Status. *Journal of Moral Philosophy*, 7(2) 159-179.

- LITTLE, M.O. (2008) Abortion and the Margins of Personhood. *Rutgers Law Journal*, 39 331-348.
- LIU, H.C., HE, Z., CHEN, C.L., ROSENWAKS, Z. (2003) Ability of Three-Dimensional (3D) Engineered Endometrial Tissue to Support Mouse Gastrulation in vitro. *Fertility and Sterility*, 80 78.
- LOCKE, J. (1979) An Essay Concerning Human Understanding. (Orig. pub. 1694). In: P.H. Nidditch (ed.) *The Clarendon Edition of the Works of John Locke*. Second edition. Oxford: Oxford University Press, Book II, 328-348.
- LOCKWOOD, M. (1988) Warnock versus Powell (and Harradine): When does Potentiality Count? *Bioethics*, 2(3) 187-213.
- LOCKWOOD, M. (2001) The moral status of the human embryo. *Human Fertility*, 4(4) 267-269.
- LOKHORST, G-J. (2018) Descartes and the Pineal Gland. In: Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy* [online]. (Winter). Available from <https://plato.stanford.edu/archives/win2018/entries/pineal-gland/> [Accessed 20 March 2020].
- LOVERING, R. (2011) The Ever Conscious View: A Critique. *Philosophy in the Contemporary World* [online]. 18(1 Spring) 90-101. Available from https://www.academia.edu/8152389/The_Ever_Conscious_View_A_Critique. [Accessed 13 February 2018].
- LUDWIG, T.E., KUJACK, A., RAUTI, A., ANDRZEJEWSKI, S., LANGBEHN, S., MAYFIELD, J., FULLER, J., YASHIRO, Y., HARA, Y., BHATTACHARYYA, A. (2018) 20 Years of Human Pluripotent Stem Cell Research: It All Started with Five Lines. *Cell Stem Cell*, 23(5) 644-648.
- LYSAUGHT, M.T. (2004) Respect: Or, How Respect for Persons Became Respect for Autonomy. *Journal of Medicine and Philosophy*, 29(6) 665-680.
- MACKLON, N.S., GERAEDTS, J.P. and FAUSER, B.C. (2002) Conception to ongoing pregnancy: the 'black box' of early pregnancy loss. *Human Reproduction Update*, 8(4) 333-343.
- MANNINEN, B.A. (2007) Revisiting the argument from potential. *Philosophy, Ethics, and Humanities in Medicine* [online] 2(7). Available from <https://doi.org/10.1186/1747-5341-2-7> [Accessed 7 March 2017].
- MARQUIS, D. (1999) Why Abortion is Immoral (orig. pub. 1989). In: Helga Kuhse and Peter Singer (eds.) *Bioethics: An Anthology*. Oxford: Blackwell, 46-57.
- MARQUIS, D. (2007) 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*. Oxford: Blackwell Publishing, 51-66.
- MARSDEN, S., and agencies (2013) Pregnant woman 'humiliated' by barman's refusal to serve her glass of wine. *The Telegraph* [online]. 27 September. Available from <http://www.telegraph.co.uk/women/10339444/Pregnant-woman-humiliated-by-barmans-refusal-to-serve-her-glass-of-wine.html> [Accessed 26 April 2015].

- MARTIN, P.M. and LAGOD, M.L. (1990) The Human Preembryo, the Progenitors, and the State: Toward a Dynamic Theory of Status, Rights, and Research Policy. *Berkeley Technology Law Journal*, 5(2) 257-310. Available from <http://scholarship.law.berkeley.edu/btlj/vol5/iss2/2> [Accessed 1 February 2018].
- McGUINNESS, S. (2012) The Construction of an Embryo. In: Muireann Quigley, Sarah Chan and John Harris (eds.) *Stem Cells: New frontiers in science and ethics*. London: World Scientific Publishing, 51-83.
- McINERNEY, P.K. (1990) Does a Fetus Already Have a Future-Like-Ours? *Journal of Philosophy*, 87(5) 264-268.
- McINTYRE, Alison (2014) Doctrine of Double Effect. In: Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy* [online]. (Winter). Available from <https://plato.stanford.edu/archives/win2014/entries/double-effect/> [Accessed 5 February 2018].
- McLACHLAN, H. (2002) Persons and Their Bodies: How We Should Think About Human Embryos. *Health Care Analysis*, 10 155-164.
- McMAHAN, J. (2002) *The Ethics of Killing: Problems at the Margins of Life*. New York, NY., USA: Oxford University Press.
- McMAHAN, J. (2005) Our Fellow Creatures. *Journal of Ethics*, 9 353-380.
- McMAHAN, J. (2007) Killing Embryos for Stem Cell Research. *Metaphilosophy*, 38(2-3) 170-189.
- McMAHON, C.A., GIBSON, F.L., LESLIE, G.I., SAUNDERS, D.M., PORTER, K.A. and TENNANT, C.C. (2003) Embryo donation for medical research: attitudes and concerns of potential donors. *Human Reproduction*, 18(4) 871-877.
- MERCURI, M., STACK, D.M., TROJAN, S., GIUSTI, L., MORANDI, F., MANTIS, I. and MONTIROSSO, R. (2019) Mothers' and fathers' early tactile contact behaviors during triadic and dyadic parent-infant interactions immediately after birth and at 3-months postpartum: Implications for early care behaviors and intervention. *Infant Behavior and Development*, 57. Available from [10.1016/j.infbeh.2019.101347](https://doi.org/10.1016/j.infbeh.2019.101347) [Accessed 7 November 2019].
- MEYER, M.J. and NELSON, L.J. (2001) Respecting What We Destroy: Reflections on Human Embryo Research. *Hastings Center Report*, 31(1) 16-23.
- MIDGLEY, M. (1983) *Animals and Why They Matter*. Athens, GA., USA: University of Georgia Press.
- MILL, J.S. (1972) On Liberty (orig. pub. 1859), in H.B. Acton (ed.) *J. S. Mill, Utilitarianism, On Liberty and Consideration on Representative Government*. London: J.D. Dent & Sons Ltd, 65-170.
- MONTGOMERY, J. (2017) Introduction. In: Nuffield Council on Bioethics (eds.) *Human Embryo Culture: Discussions concerning the statutory time limit for maintaining human embryos in culture in the light of some recent scientific developments*, 3-11. Available from <https://www.nuffieldbioethics.org/publications/time-limits-on-maintaining-human-embryos-in-research> [Accessed 8 February 2018].

- MORETON, K. (2017) Legal Commentary – Twisted Reasoning: Disentangling Matters of Law, Conjoined Embodiment, Life, and Death. In: S.W. Smith, J. Coggon, C. Hobson, R. Huxtable, S. McGuinness, J. Miola and M. Neal (eds.) *Ethical Judgments: Re-Writing Medical Law*. Oxford: Hart Publishing, 24-30.
- MOTTA, R. (2014) Social disputes over GMOs: An overview. *Sociology Compass*, 8(12) 1360-1376.
- MUNIER, N. (2011) *A Strategy for Using Multicriteria Analysis in Decision-Making: A Guide for Simple and Complex Environmental Projects*. Dordrecht: Springer.
- MURRAY, J.E. (2004) Chapter 9: Richard and Ronald Herrick, First Identical-Twin Kidney Transplant. In: *Surgery of the Soul: Reflections on a Curious Career*. Sagamore Beach, MA, USA: Science History Publications, 73-85.
- NATIONAL BIOETHICS ADVISORY COMMISSION (1999) *Ethical Issues in Human Stem Cell Research Volume 1*. Rockville, Maryland, USA: NBAC.
- NHS CHOICES (2015) *Gift Vouchers can help pregnant smokers quit*. [online] NHS. Available from <https://www.nhs.uk/news/heart-and-lungs/gift-vouchers-can-help-pregnant-smokers-quit/> [Accessed 26 April 2015].
- NHS CHOICES (2017a) *You and your baby at 0-8 weeks pregnant*. [online] NHS. Available from <https://www.nhs.uk/conditions/pregnancy-and-baby/pregnancy-weeks-4-5-6-7-8/> [Accessed 17 December 2017].
- NHS CHOICES (2017b) *Ultrasound scans in pregnancy*. [online] NHS. Available from <https://www.nhs.uk/conditions/pregnancy-and-baby/ultrasound-anomaly-baby-scans-pregnant/> [Accessed 17 December 2017].
- NATIONAL INSTITUTES OF HEALTH (1994) *Report of the Human Embryo Research Panel*. Available from <http://hdl.handle.net/10822/559352> [Accessed 28 April 2019].
- NODDINGS, N. (1984) *Caring: A Feminine Approach to Ethics and Moral Education*. Berkeley, CA., USA: University of California Press.
- NOONAN Jr., J.T. (1968) Deciding who is human. *Natural Law Forum*, 13 134-140.
- NOONAN Jr., J.T. (1970) An Almost Absolute Value in History. In: John Noonan (ed.) *The Morality of Abortion: Legal and Historical Perspectives*. Cambridge, Mass., USA: Harvard University Press, 51-59.
- NORDGREEN, J., GARNER, J.P., JANCZAK, A.M., RANHEIM, B., MUIR, W.M. and HORSBERG, T.E. (2009) Thermnociception in fish: Effects of two different doses of morphine on thermal threshold and post-test behaviour in goldfish. *Applied Animal Behaviour Science*, 119(1-2) 101-107.
- NUFFIELD COUNCIL ON BIOETHICS (2018) *Genome editing and human reproduction: social and ethical issues*. London: Nuffield Council on Bioethics.
- OLSON, E.T. (1997) Was I Ever a Fetus? *Philosophy and Phenomenological Research* 57(1) 95-110.

- O'NEILL, O. (2002) *The Reith Lectures: A Question of Trust: 2. Trust and Terror* [online lecture]. London: BBC Radio 4. Available at <http://www.bbc.co.uk/radio4/reith2002/lecture2.shtml> [Accessed 8 March 2020].
- OPENSTAX (2016) *Anatomy and Physiology*. Unit 4, Chapter 19.5 Development of the Heart. OpenStax CNX. Available from <http://cnx.org/contents/14fb4ad7-39a1-4eee-ab6e-3ef2482e3e22@8.24> [Accessed 4 March 2020].
- ORD, T. (2008) The Scourge: Moral Implications of Natural Embryo Loss. *The American Journal of Bioethics*, 8(7) 12-19.
- OED (OXFORD ENGLISH DICTIONARY) ONLINE. Oxford University Press [online]. Definition of *status*, n. and adj. Available from <https://www.oed.com./view/Entry/189355?redirectedFrom=status&> [Accessed 17 March 2013]. Definition of *respect*, n (and int.). Available from <https://www.oed.com./view/Entry/163779?rskey=6lYveS&result=1> [Accessed 13 October 2015].
- PARFIT, D. (1986) *Reasons and Persons*. Oxford: Oxford University Press.
- PARLIAMENTARY OFFICE OF SCIENCE AND TECHNOLOGY (1997) Fetal Awareness [online]. *POSTnote* 94. Available from <https://researchbriefings.parliament.uk/ResearchBriefing/Summary/POST-PN-94#fullreport> [Accessed 3 February 2018].
- PERRIN, D. & BURGIO, G. (2019) New Details About The Infamous 'CRISPR Babies' Experiment Have Just Been Revealed. *The Conversation* [online]. 9 December. Available from <https://www.sciencealert.com/china-s-failed-experiment-proves-we-re-not-ready-for-human-gene-editing> [Accessed 10 December 2019].
- PERSSON, I. and SAVULESCU, J. (2010) Actualizable Potential, Reproduction, and Embryo Research: Bringing Embryos into Existence for Different Purposes or Not. *Cambridge Quarterly of Healthcare Ethics*, 19(1) 51-60.
- PERSSON, I. and SAVULESCU, J. (2013) Getting Moral Enhancement Right: The Desirability of Moral Bioenhancement. *Bioethics*, 27(3) 124-131.
- POPE JOHN PAUL II (1984) Discourse to those taking part in the 35th General Assembly of the World Medical Association, 29 October 1983: *Acta Apostolicae Sedis*, LXXVI, 389-395. [online] Rome, Italy: Vatican. Available from <http://www.vatican.va/archive/aas/documents/AAS-76-1984-ocr.pdf> [Accessed 27 July 2012].
- PUGH, J. (2014) Embryos, the principle of proportionality, and the shaky ground of moral respect. *Bioethics*, 28(8) 420-426.
- QUINN, W. (1984) Abortion, Identity and Loss. *Philosophy & Public Affairs*, 13(1 Winter) 24-54.
- RACHELS, J. (1999) *Do Animals Have Moral Standing?* [Unpublished lecture]. Available from <http://www.jamesrachels.org/MoralStanding.pdf> [Accessed 23 September 2017].

- RACHELS, J. (2004) Drawing Lines. In: Cass R. Sunstein and Martha C. Nussbaum (eds.) *Animal Rights: Current Debates and New Directions*. Oxford: Oxford University Press, 162-174.
- RAHNER, K. (1972) *Theological Investigations Volume IX: Writings of 1965-67*. Graham Harrison (trs.). London: Darton, Longman and Todd.
- RAMSEY, P. (1970) *Fabricated Man: The ethics of genetic control*. New Haven, CT, USA: Yale University Press.
- RÄSÄNEN, J. (2019) Schrödinger's Fetus. *Medicine, Health Care and Philosophy* [online], 23 125-30. Available from <https://doi.org/10.1007/s11019-019-09916-4> [Accessed 4 September 2019].
- RAUSCHER, F. (2017) Kant's Social and Political Philosophy. In: Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy* [online]. (Spring). Available from <https://plato.stanford.edu/archives/spr2017/entries/kant-social-political/> [Accessed 3 February 2018].
- REGAN, T. (1976) Feinberg on What Sorts of Beings Can Have Rights. *The Southern Journal of Philosophy*, 14(4) 485-498.
- REGAN, T. (1985) The Case for Animal Rights. In: Peter Singer (ed.) *In Defense of Animals*. New York, NY., USA: Basil Blackwell, 13-26.
- REGAN, T. (2004) *The Case for Animal Rights*. Second edition. Berkeley, CA., USA: University of California Press.
- REGALADO, A. (2019) China's CRISPR babies: read exclusive excerpts from the unseen original research. *MIT Technology Review* [online]. 3 December. Available from <https://www.technologyreview.com/s/614764/chinas-crispr-babies-read-exclusive-excerpts-he-jjankui-paper/> [Accessed 22 March 2020].
- REIBER, D.T. (2010) The Morality of Artificial Womb Technology. *The National Catholic Bioethics Quarterly*, 10(3) 515-527.
- RINI, R.A. (2013) Of course the baby should live: against 'after-birth abortion'. *Journal of Medical Ethics*, 39 353-356.
- ROBERTSON, J.A. (1994) *Children of Choice: Freedom and the New Reproductive Technologies*. New Jersey, NY., USA: Princeton University Press.
- ROBERTSON, J.A. (1995) Symbolic Issues in Embryo Research. *Hastings Center Report*, 25(1) 37-38.
- ROBERTSON, J.A. (1999) Ethics and Policy in Embryonic Stem Cell Research. *Kennedy Institute of Ethics Journal*, 9(2) 109-136.
- ROMANIS, E.C. (2019) Artificial womb technology and the significance of birth: why gestatelings are not newborns (or fetuses). *Journal of Medical Ethics*, 45 728-731.
- ROSS, W.D. (1930) *The Right and the Good*. Oxford: Oxford University Press.

- ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS (2010) *Fetal Awareness: Review of Research and Recommendations for Practice* [online]. London: Royal College of Obstetricians and Gynaecologists. Available from <https://www.rcog.org.uk/globalassets/documents/guidelines/rcogfetalawarenesswpr0610.pdf> [Accessed 25 July 2017].
- ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS (2012) *Your baby's movements in pregnancy* [online]. Available from <https://www.rcog.org.uk/globalassets/documents/patients/patient-information-leaflets/pregnancy/pi-your-babys-movements-in-pregnancy.pdf> [Accessed 26 August 2018].
- ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS (2014) *Perinatal Management of Pregnant Women at the Threshold of Infant Viability (The Obstetric Perspective)*. Scientific Impact Paper No. 41 [online]. Available from https://www.rcog.org.uk/globalassets/documents/guidelines/scientific-impact-papers/sip_41.pdf [Accessed 15 July 2019].
- SACHS, B. (2011) The Status of Moral Status. *Pacific Philosophical Quarterly*, 92 87-104.
- SAIGAL, S. and DOYLE, L.W. (2008) An overview of mortality and sequelae of preterm birth from infancy to adulthood. *Lancet*, 371 261-269.
- SALLOCH, S., WASCHER, S., VOLLMANN, J. and SCHILDMANN, J. (2015) The normative background of empirical-ethical research: first steps towards a transparent and reasoned approach in the selection of an ethical theory. *BMC Medical Ethics* [online]. 16(20). Available from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4404235/> [Accessed 30 April 2019].
- SAMPLE, I. (2016) Researchers break record for keeping lab-grown human embryos alive. *The Guardian* [online] 5 May. Available from <https://www.theguardian.com/science/2016/may/04/scientists-break-record-for-keeping-lab-grown-human-embryos-alive> [Accessed 7 May 2016].
- SATTAUR, O. (1984) New Conception Threatened by Old Morality. *New Scientist* [online] 27 September. 103(1423) 12-17. Available from <http://hdl.handle.net/10822/805028> [Accessed 2 February 2018].
- SAVULESCU, J. (2001) Procreative Beneficence: why we should select the best children. *Bioethics*, 15(5/6) 413-426.
- SAVULESCU, J. (2002) The Embryonic Stem Cell Lottery and the Cannibalization of Human Beings. *Bioethics*, 16(6) 508-529.
- SAYRE-McCORD, G., (2014) Metaethics. In: Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy* [online]. (Summer). Available from <https://plato.stanford.edu/entries/metaethics/> [Accessed 3 August 2014].
- SCHWEITZER, A. (2009) The Ethics of Reverence for Life (orig. pub. 1936) and Civilization and Ethics (orig. pub. 1929). In: Predrag Cicovacki (ed.) *Albert Schweitzer's Ethical Vision: A Sourcebook*. Oxford: Oxford University Press.
- SCOTT, R. (2002) *Rights, duties and the body: Law and Ethics of Maternal-fetal Conflict*. Oxford: Hart Publishing.

- SHAHBAZI, M.N., JEDRUSIK, A., VUORISTO, S., RECHER, G., HUPALOWSKA, A., BOLTON, V., FOGARTY, N.M., CAMPBELL, A., DEVITO, L.G., ILIC, D., KHALAF, Y., NIAKAN, K.K., FISHEL, S. and ZERNICKA-GOETZ, M. (2016) Self-organization of the human embryo in the absence of maternal tissues. *Nature Cell Biology*, June 18(6) 700-708.
- SHELDON, S. and WILKINSON, S. (2004) Should selecting saviour siblings be banned? *Journal of Medical Ethics*, 30 533-537.
- SIMMONS, A. (2012) Do Embryos Have Interests? Why Embryos are Identical to Future Persons but Not Harmed by Death. *Journal of Bioethical Inquiry*, 9(1) 57-66. Available from <https://philpapers.org/archive/SIMDEH.pdf> [Accessed 12 October 2014].
- SINGER, P. (1980) Animals and the Value of Life. In: Tom Regan (ed.) *Matters of Life and Death*. Philadelphia, PA, USA: Temple University Press, 218-259.
- SINGER, P. (1993) *Practical Ethics*. Second edition. Cambridge: Cambridge University Press.
- SINGER, P. and DAWSON, K. (1988) IVF Technology and the Argument from Potential. *Philosophy & Public Affairs*, 17(2) 87-104.
- SINGER, P. and WELLS, D. (1984) *The Reproduction Revolution: New Ways of Making Babies*. Oxford: Oxford University Press.
- SMAJDOR, A. (2007) The Moral Imperative for Ectogenesis. *Cambridge Quarterly of Healthcare Ethics*, 16 336-345.
- SMITH, B., and BROGAARD, B. (2003) Sixteen Days. *The Journal of Medicine and Philosophy*, 28(1) 45-78.
- STARR, S. (2017) *Evidence to Science and Technology Committee of the House of Commons* [speech]. London: House of Commons, 1 February. Available from <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/science-and-technology-committee/my-science-inquiry/oral/46625.html> [Accessed 26 February 2017].
- STEIGER, E. (2010) Not of Woman Born: How Ectogenesis Will Change the Way We View Viability, Birth, and the Status of the Unborn. *Journal of Law and Health*, 23 143-171.
- STEINBOCK, B. (1992) *Life Before Birth: The Moral and Legal Status of Embryos and Fetuses*. New York, NY., USA: Oxford University Press.
- STEINBOCK, B. (2006) The Morality of Killing Human Embryos. *Journal of Law, Medicine and Ethics*, 34(1 Spring) 26-34.
- STEINBOCK, B. (2007) Moral status, moral value, and human embryos: Implications for stem cell research. In: Bonnie Steinbock (ed.) *The Oxford Handbook of Bioethics*. Oxford: Oxford University Press, 416-440.
- STEPTOE, P.C. and EDWARDS, R.G. (1978) Birth after the reimplantation of the human embryo. *The Lancet*, 312(8085) 366.
- STIER, M. and SCHOENE-SEIFERT, B. (2013) The Argument from Potentiality in the Embryo Protection Debate: Finally “Depotentialized”? *American Journal of Bioethics*, 13(1) 19-27.

- STONE, C.D. (1987a) *Earth and Other Ethics: The Case for Moral Pluralism*. New York: Harper & Row.
- STONE, J. (1987b) Why Potentiality Matters. *Canadian Journal of Philosophy*, 17(4) 815-829.
- STRONG, C. (1997a) The moral status of pre-embryos, embryos, fetuses and infants. *Journal of Medicine and Philosophy*, 22(5) 457-478.
- STRONG, C. (1997b) *Ethics in Reproductive and Perinatal Medicine: A New Framework*. New Haven, CT., USA: Yale University Press.
- SUFFIELD, W. (2016a) Mapping Moral Status. *Under Construction@ Keele* 3(1) 14-21. Available from <https://www.keele.ac.uk/media/keeleuniversity/ri/rihums/underconstruction/Under%20Construction%20@%20Keele%20Volume%203%20Issue%201.html> [Accessed 15 December 2016].
- SUFFIELD, W. (2016b) *Freedom of Information request* [email]. Sent to Keen, C. FoiRequest@hfea.gov.uk, 8 December.
- SUFFIELD, W. (2018a) *Freedom of Information request* [email]. Sent to Joski-Jethi, C. FoiRequest@hfea.gov.uk. 10 September.
- SUFFIELD, W. (2018b) *Freedom of Information request* [email]. Sent to Joski-Jethi, C. FoiRequest@hfea.gov.uk. 17 October.
- SUMNER, L.W. (1981) *Abortion and Moral Theory*. Princeton, N.J., USA: Princeton University Press.
- TAUER, C.A. (2001) The Types of Moral Status. *Hastings Center Report*, 31(1) 45-47.
- THOMSON, J.J. (1999) A Defense of Abortion. (orig. pub. 1971) In: Helga Kuhse and Peter Singer (eds.) *Bioethics: An Anthology*. Oxford: Blackwell, 36-45.
- TOOLEY, M. (1999) Abortion and Infanticide (orig. pub. 1972). In: Helga Kuhse and Peter Singer (eds.) *Bioethics: An Anthology*. Oxford: Blackwell, 21-35.
- TOOLEY, M. (2012) Personhood. (orig. pub. 1998). In: Helga Kuhse and Peter Singer (eds.) *A Companion to Bioethics*. Second Edition. Oxford: Wiley-Blackwell, 129-139.
- UÍ CHONNACHTAIGH, S. (2012) The Monopoly of Moral Status in Debates on ESCR. In Muireann Quigley, Sarah Chan and John Harris (eds.) *Stem Cells: New frontiers in science and ethics*. London: World Scientific Publishing, 19-49.
- UN GENERAL ASSEMBLY (1948) *Universal Declaration of Human Rights*, 217(III) A. Paris. [online]. Available from <https://www.un.org/en/universal-declaration-human-rights/> [Accessed 1 May 2019].
- UNIVERSITY OF CAMBRIDGE (2019) Widely available antibiotics could be used in the treatment of ‘superbug’ MRSA. *Science Daily* [online]. 24 June. Available from <https://www.sciencedaily.com/releases/2019/06/190624111616.htm> [Accessed 27 February 2020].

- VERDICT MEDIA LIMITED (2018) *CRISPR babies: an ethical framework is urgently needed*. [online] 7 December. London: Verdict Media Limited. Available from <https://www.medicaldevice-network.com/comment/crispr-babies-ethics/> [Accessed 8 December 2018].
- WANNAN, O. and DERBYSHIRE, L. (2016) Dry AMD treatment's 'major achievement'. *Optometry Today* [online] 27 July. Available from <https://www.aop.org.uk/ot/science-and-vision/research/2016/07/27/dry-amd-treatments-major-achievement> [Accessed 16 November 2017].
- WARNOCK, M. (1985) *A Question of Life*. Oxford: Basil Blackwell Ltd.
- WARNOCK, M. (1987) Do Human Cells Have Rights? *Bioethics*, 1(1) 1-14.
- WARNOCK, M. (2016) Presentation on The Warnock Report and the 14-Day Rule. [keynote speech] In: Progress Educational Trust Conference. *Rethinking the Ethics of Embryo Research, Genome Editing, 14 Days and Beyond*, London, 7 December [unpublished].
- WARNOCK, M. (2017) Should the 14-day limit on human embryo research be extended? *BioNews* [online]. 883, 9 January 2017. Available from https://www.bionews.org.uk/page_95833 [Accessed 9 January 2017].
- WARREN, M.A. (1973) On the Moral and Legal Status of Abortion. *The Monist*, 57(1) 43-61.
- WARREN, M.A. (1977) Do Potential People Have Moral Rights? *Canadian Journal of Philosophy*, 7(2) 275-289.
- WARREN, M.A. (1997) *Moral Status: Obligations to Persons and Other Living Things*. Oxford: Oxford University Press.
- WARREN, M.A. (2000) Abortion. In: Peter Singer (ed.) *A Companion to Ethics*. Oxford: Blackwell, 303-313.
- WEE, M. (2019) Euthanasia, withdrawing treatment and the concept of intention. *Law & Justice – The Christian Law Review*, 182 7-24.
- WETLESEN, J. (1999) The Moral Status of Beings who are not Persons: A Casuistic Argument. *Environmental Values*, 8(3) 287-323.
- WILKINSON, S. (2007) Commodification. In: Richard E. Ashcroft; Angus Dawson; Heather Draper and John R. McMillan (eds.) *Principles of Health Care Ethics*. Second edition. Chichester: John Wiley & Sons, 285-291.
- WILSON, D. (2014) *The Making of British Bioethics* [online] Chapter 4. Manchester: Manchester University Press. Available from <http://www.manchesteruniversitypress.co.uk/9780719096198/> [Accessed 3 June 2016].
- WINSTON, R. and CHICOT, R. (2016) The importance of early bonding on the long-term mental health and resilience of children. *London Journal of Primary Care*, 8(1)12-14.
- WOLPERT, L. (1991) *The Triumph of the Embryo*. Oxford: Oxford University Press.
- WRIGHT, M. (2009) Inverse Care Law and Distributive Justice. *Patient* [online] 17 July. Available from <https://patient.info/doctor/inverse-care-law-and-distributive-justice#nav-1> [Accessed 30 March 2020].

- WRIGLEY, A. (2013) Limitations on personhood arguments for abortion and 'after-birth abortion'. *Journal of Medical Ethics* [online] 39 e15-e18. Available from <https://jme.bmj.com/content/39/5/e15> [Accessed 21 August 2017].
- WRIGLEY, A. (2015) An eliminativist approach to vulnerability. *Bioethics*, 29(7) 478-487.
- WRIGLEY, A., WILKINSON, S. and APPLEBY, J.B. (2015) Mitochondrial replacement: ethics and identity. *Bioethics*, 29(9) 631-638.
- YU, S.C.Y. (2019) The Moral Status of Infants and Fetuses: Teleological potential, Justice and Charity. *Journal of Philosophy of Life*, 9(1) 64-81.
- YUKO, E. (2012) *Is the development of artificial wombs ethically desirable?* PhD. Dublin City University. Available from http://doras.dcu.ie/17451/1/PhD_Elizabeth_Yuko_Sept_2012.doc [Accessed 21 February 2020].
- ZOHAR, N.J. (2015) Divine Representations and the Value of Embryos: God's Image, God's Name and the Status of Human Non-Persons. In: L. Zoloth and E.N. Dorff (eds.) *Jews and Genes: The Genetic Future in Contemporary Jewish Thought*. Lincoln, Nebraska, USA: University of Nebraska Press Jewish Publication Society, 55-67.

APPENDIX 1: Pre-natal loss

Pregnancy loss occurs before 6 weeks, after a positive pregnancy test but before ultrasound confirmation. **Miscarriage** is the clinical term used for losses after ultrasound has confirmed pregnancy, up to 24 weeks. **Spontaneous abortion** is noninduced embryonic or fetal death or passage of products of conception before 20 weeks' gestation.

Estimated occurrence is best indicated in the image reproduced here (Larsen et al. 2013, 154):

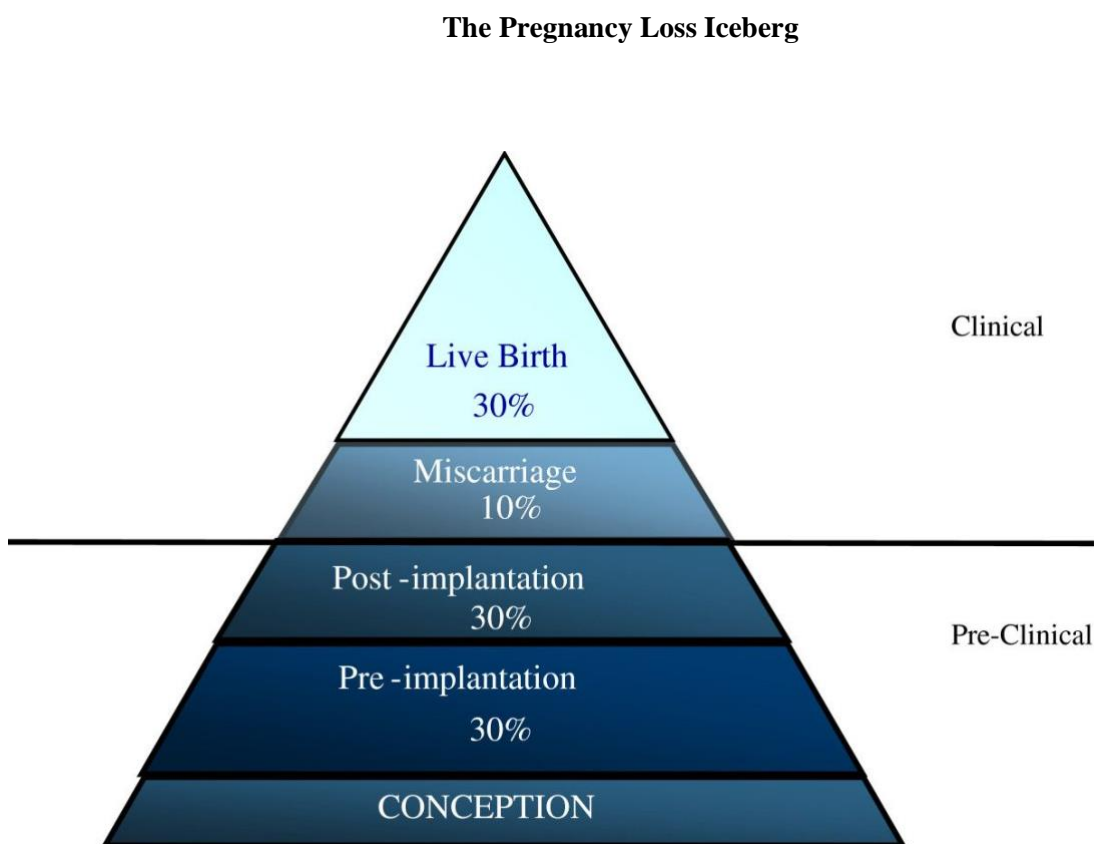


Figure 1

The pregnancy loss iceberg: an overview of the outcome of spontaneous human conceptions. It is estimated that 70% of conceptions are lost prior to live birth. The majority of these losses occur prior to implantation or before the missed menstrual period, and since they are not revealed to the woman they are termed preclinical. In the pregnancy loss 'iceberg', they are therefore below the 'waterline'. © Larsen et al.; licensee BioMed Central Ltd. 2013 (Open Access)

From: Larsen, E.C., Christiansen, O.B., Kolte, A.M. and Macklon, N. (2013) New insights into mechanisms behind miscarriage. *BMC Medicine* [online]. 11(1) 154 e3. Available from <https://bmcmedicine.biomedcentral.com/articles/10.1186/1741-7015-11-154> [Accessed 3 Sep 2016]. Figure reproduced by permission from Oxford University Press from Macklon, N.S., Geraedts, J.P. and Fauser, B.C. (2002) Conception to ongoing pregnancy: the 'black box' of early pregnancy loss. *Human Reproduction Update*, 8(4) 333-343 at 335.

APPENDIX 2: Dating sentience

‘The question “can a fetus feel pain” at a given age has a number of scientific components. There are questions of neural development and the integration of the sensory system into the developing brain; and of the development of structures and functions of the brain that are necessary for awareness of pain’ (Parliamentary Office of Science and Technology 1997, 1).

| TIMING (in gestation weeks) | OBSERVATION | SOURCE |
|--------------------------------|---|--|
| 7-8 | Reacts to touch in the peri-oral region. | Derbyshire 2008, 119. |
| 8-10 | Cerebral cortex starts to form, although has few connections. | Anand et al. 1999, 67. |
| 10 18-19 | Nociceptors first appear but not sufficient for experience of pain. Fetus withdraws from needle and may exhibit stress response at 18 weeks but fibres from nociceptors to spinal cord not demonstrated before 19 weeks. | Royal College of Obstetricians and Gynaecologists 2010, 23 |
| 20 | Fetus starts to respond to touch and sound. Hormonal stress responses noted in painful procedures Pain relief is now used from 22 weeks (post-menstrual) as a matter of good medical practice. | Anand et al. 1987; Anand et al. 1999, 68. |
| 24 | The human fetus does not have the necessary structural integration of the nervous system to experience awareness or pain before this | Royal College of Obstetricians and Gynaecologists 2010, viii, 23 |
| 26 | ‘[G]ood evidence exists that the biological system necessary for pain is intact and functional from around 26 weeks’ gestation’, but development of neuroatomical system is ‘necessary but not sufficient for pain experience’. | Derbyshire 2006, 910, 912. |

APPENDIX 3: Figures on embryos created for research sourced from a Freedom of Information request to the Human Fertilisation & Embryology Authority

Data received from our research clinics

| 2016 data | Fresh embryos | Frozen embryos |
|--|----------------------|-----------------------|
| Number received but not yet used for research as of 31 December 2015 | ----- | 1593 |
| Number received between 1 January 2016 and 31 December 2016 | 375 | 1352 |
| Number disposed of between 1 January 2016 and 31 December 2016 prior to being used in research | 10 | 39 |
| Number used between 1 January 2016 and 31 December 2016 | 365 | 740 |
| Number received but not yet used for research as of 31 December 2016 | ----- | 2166 |

| 2016 data | Fresh embryos | Frozen embryos |
|--|----------------------|-----------------------|
| Number of embryos created for the research project but not yet used as of 31 December 2015 | ----- | 0 |
| Number created for the research project between 1 January 2016 and 31 December 2016 | 87 | 0 |
| Number disposed of between 1 January 2016 and 31 December 2016 prior to being used in research | 0 | 0 |
| Number used between 1 January 2016 and 31 December 2016 | 87 | 0 |
| Number created but not yet used for research as of 31 December 2016 | ----- | 0 |

| 2017 data | Fresh embryos | Frozen embryos |
|--|----------------------|-----------------------|
| Number received but not yet used for research as of 31 December 2016 | ----- ---- | 131 |
| Number received between 1 January 2017 and 31 December 2017 | 0 | 56 |
| Number disposed of between 1 January 2017 and 31 December 2017 prior to being used in research | 0 | 18 |
| Number used between 1 January 2017 and 31 December 2017 | 0 | 11 |
| Number received but not yet used for research as of 31 December 2017 | ----- ---- | 158 |

| 2017 data | Fresh embryos | Frozen embryos |
|--|----------------------|-----------------------|
| Number of embryos created for the research project but not yet used as of 31 December 2016 | ----- ---- | 0 |
| Number created for the research project between 1 January 2017 and 31 December 2017 | 0 | ----- ---- |
| Number disposed of between 1 January 2017 and 31 December 2017 prior to being used in research | 0 | 0 |
| Number used between 1 January 2017 and 31 December 2017 | 0 | 0 |
| Number created but not yet used for research as of 31 December 2017 | ----- ---- | 0 |

Suffield, W. (2018a). Freedom of Information request [email]. Joski-Jethi, Caylin, Head of Intelligence. E: FoiRequest@hfea.gov.uk. 10 September.

Figures for 2014-2015 were provided by the HFEA in a Freedom of information request on 8 December 2016, but the data was not summarised as above and the spreadsheets were too numerous to include.

APPENDIX 4: Figures on frozen embryos stored in the UK, sourced from a Freedom of Information request to the Human Fertilisation & Embryology Authority

This response has been prepared in line with the Authority’s obligations under the Freedom of Information Act 2000 (‘FOIA’).

‘Your exact request from 19 September 2018 was:

‘the total number of embryos in storage for any purpose

‘The HFEA holds information relevant to your request. Unfortunately, due to changes in our database over time, we have not been able to identify the total number of embryos in storage over time. Instead, we have provided the total number of embryos remaining in storage from cycles which took place in the past 5 years.’

| Year of original fresh cycle | Number of embryos remaining in storage (as of 16/10/2018) |
|------------------------------|---|
| 2013 | 23,501 |
| 2014 | 26,198 |
| 2015 | 34,808 |
| 2016 | 43,792 |
| 2017 | 53,911 |
| Total | 182,210 |

Suffield, W. (2018b). Freedom of Information request [email]. Joski-Jethi, Caylin, Head of Intelligence. E: FoiRequest@hfea.gov.uk. 17 October.